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AIRLINE CONCENTRATION

HEARING

BEFORE THE

SUBCOMMITTEE ON AVIATION

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION
UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

FIRST SESSION

ON

EFFECTS OF AIRLINE CONCENTRATION AT HUB AIRPORTS ON FARES AND SERVICE

JUNE 7, 1989

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AIRLINE CONCENTRATION

WEDNESDAY, JUNE 7, 1989

U.S. SENATE,
SUBCOMMITTEE ON AVIATION,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:35 p.m., in room SR-253, Russell Senate Office Building, Hon. Wendell H. Ford (chairman of the subcommittee) presiding.

Staff members assigned to this hearing: Steve Palmer, senior professional staff member; Carol Carmody, professional staff member; and John Timmons, minority staff counsel.

OPENING STATEMENT BY SENATOR FORD

Senator FORD. Good afternoon, ladies and gentlemen. Today we are here to look at the effects of airline concentration at hub airports on fares and service. This is a follow on to a hearing the Commerce Committee held last September on the initiative of Senator Danforth.

We are concerned about what happens in the airline industry because most of us are weekend travelers and few of us can take advantage of discount fares. We are familiar with airline hubs and understand why air carriers find it convenient to structure their routes around the hubs.

In 1978, when we deregulated the airlines, we hoped to provide a competitive environment where the passenger would benefit from lower fares and a choice of routes and carriers. I think that much of this has been accomplished in the first 10 years of deregulation. What worries me is the increasing concentration at some of our hubs, which could mean higher fares and poor service for the flying public.

Last year the General Accounting Office studied fares and service at St. Louis, a highly concentrated hub. The GAO found that fares had increased far beyond the national average and the number of carriers offering service had declined.

The GAO has extended the study to 14 other concentrated hubs and will report today that fares at these airports are on average 27 percent higher than fares at unconcentrated airports. Competition on many routes from concentrated airports has decreased and the number of places served directly by only one carrier from these airports has increased by 25 percent.

These statistics are disturbing to me, because they indicate the American public may not be gaining the full benefits of deregulation. We look forward to hearing testimony from the GAO today about their study. The industry has also done some research and we will hear their explanation of their findings.

What I have heard so far has raised many questions in my mind. I hope that our hearing today will provide some answers.

Senator McCain, we are delighted to get this hearing underway. Do you have a statement you would like to make this afternoon?

OPENING STATEMENT BY SENATOR McCAIN

Senator **McCain**. Thank you, Mr. Chairman. I apologize for being a few minutes late. As you know I have been involved in a small issue on catastrophic illness, which is of passing interest to our country's seniors, and I may have to return to the floor shortly and I regret that very much because this issue is one that you and I have been involved in now for a long time.

I think we have now received the second installment of three that will give us, I think, some pretty clear-cut evidence that we are progressing towards what you and I, Mr. Chairman, most fear, and that is de facto reregulation, at least in some parts of the airline industry.

I think we are going to find that where there is a concentration in a hub by one airline that in those airports, air fares have gone up.

I noticed with some interest, as you probably did too, Mr. Chairman, when Eastern Airlines experienced its difficulties that on every single route flown by Eastern on which there was a reduction in flights, there was a commensurate increase in air fares by their competitors. It ranged from very small amounts of money on some routes to extremely large amounts of money on others.

I think this is a crucial issue. I think that it is up to us as supporters of airline deregulation to do everything we can that we do not return to a situation of de facto reregulation. In my view we are in serious danger of this. Rather than elaborate on all of the reasons and occurrences that have brought us to this particular situation, I look forward to hearing the witnesses and thank you again, Mr. Chairman, for holding this very important hearing and your involvement in this issue.

Senator **Ford**. Thank you very much, senator. Senator Danforth, do you have a statement you would like to make?

OPENING STATEMENT BY SENATOR DANFORTH

Senator **Danforth**. Mr. Chairman, I thank you also for holding the hearings. This obviously is an important subject. Eleven years ago, when we deregulated air transportation we did so because we thought the benefits would flow to the traveling public.

It was our view at that time that competition would take the place of regulation and that a competitive market system would keep services at a high level and prices at a reasonably low level. The question has arisen over the last few years whether deregulation has worked as anticipated, because of the fact that there has been great concentration at certain airports.

Some time ago, the General Accounting Office was asked to make a study of Lambert, in St. Louis, and the study found that in fact fares at Lambert had gone up considerably due to concentration. Now, the question has been raised in general with respect to the concentration at a variety of airports in the United States. I look forward to hearing from the GAO and from other witnesses, and again I thank you for holding the hearing.

Senator **Ford**. Thank you, Senator Danforth. Senator Bryan?

OPENING STATEMENT BY SENATOR BRYAN

Senator **Bryan**. Mr. Chairman, I too would like to add my note of commendation to you for convening this hearing. Airline transportation is critical, not only for the people in my state but as a leading tourist attraction in the nation and indeed the world, safe, convenient and affordable airline travel is absolutely essential to my own state's economy.

In my home state of Nevada, the airlines play a particularly important role in support of our tourism industry. Safe, reliable and fairly priced airline service is critical not only to Nevada passengers, but also to the millions of Americans who use the airlines to visit Nevada. Over 40% of the visitors to Southern Nevada, and over 50% of the visitors to Northern Nevada travel by air to reach Nevada.

The airline industry has undergone considerable change in the decade since Congress passed the Airline Deregulation Act of 1978. Deregulation has resulted in dramatic increases in the number of passengers and commercial operations. In Northern Nevada, the number of airline passengers since deregulation has tripled and the number of airlines serving the area has increased from 3 to 9. Likewise in Southern Nevada, the number of airline passengers over the past decade had increased by 50% and the number of scheduled flights has increased almost 20%.

I also understand that nationally—on average—the fares paid by airline passengers have declined since deregulation. But I fear that this "national average" is only that—an "average." What an "average" can hide is that, after an initial decline in prices after deregulation, many Americans are now facing dramatically increasing prices for airline service.

One example from Nevada is instructive. Immediately after deregulation there was a terrific competitive battle to offer service between Reno and Las Vegas. Exactly the kind of competition that was envisioned by deregulation. As many as six carriers provided service on the route and offered fares as low as $39. Today—in a scene that I understand is repeated in many similar routes throughout the country—only one carrier flies between the two major Nevada cities. And the fare today is $240. Even adjusting for inflation, I believe it is clear that Nevadans are no longer enjoying the benefits of deregulation they once did.

I recognize that the purpose of today's hearing is to focus on the effect of airline deregulation on the major hubs, and I look forward to hearing from our witnesses today on that issue.

However, I am also concerned about the effect of deregulation on residents in small and medium size cities. I understand that the GAO is working on a study specifically focusing on that aspect of the issue. I also look forward to that GAO's report, which I have requested include an examination of the Las Vegas and Reno markets.

Senator **Ford**. Senator Pressler.

OPENING STATEMENT BY SENATOR PRESSLER

Senator **Pressler**. Thank you, Mr. Chairman.

Mr. Chairman, I owe a special thank you to the ranking member of this committee, Senator Danforth, for originally identifying this problem and requesting the original General Accounting Office study. When the first study was announced in September of last year, there was strong interest among members of this committee who readily relate to air travel difficulties.

This time, we've gone a step further. Today's focus is "The Son of St. Louis," or a second GAO study examining fifteen hub airports in the United States with substantial airline concentration. The fares and services available at these airports are compared with nearly forty unconcentrated airports.

The initial results are disturbing. The GAO says yields at concentrated airports are higher than yields at unconcentrated airports. Furthermore, dominant carriers enjoy higher yields than other airlines serving the same airports in the majority of the cases. Finally, the study demonstrates a clear correlation between the establishment of a dominant position at a hub airport and an increase in yields.

We all recognize the benefits that comes from the post-deregulation hubbing concept. The airline industry has enjoyed more passengers per flight and increased earnings because of the added efficiency resulting from hubbing.

There is, however, a problem. Secretary of Transportation Skinner, when confirmed by this committee, testified: "We have to find ways to instill competitiveness in the system." I agree wholeheartedly.

The GAO findings hit close to home for me because of South Dakota's reliance on hubs in Minneapolis/St. Paul and St. Louis. At the Twin Cities airport, Northwest Airlines received about seventeen cents per passenger miles. Meanwhile, other airlines flying out of the Minneapolis/St. Paul International Airport received slightly more than fifteen cents per passenger mile. Average yields at the 38 other comparison airports were at fourteen cents per passenger mile.

If you fly out of Sioux Falls or any other city in South Dakota, chances are you will fly through Minneapolis. To use a railroad term, these "captive" travelers have few air transportation options because of the market dominance of Northwest Airlines. The GAO findings show that South Dakota travelers and others forced to use hub airports have few fare options, either.

This scenario is even more complicated when a dominant carrier with a captive market is the target of a hostile takeover. The corporate raiders do not hesitate to agree to a highly leveraged deal. This debt can lead to deteriorating service, aging equipment, and lesser attention to smaller markets like those found in my home state. The precarious position of Northwest Airlines is a cause for worry in South Dakota because of our dependence on the airline.

Again, this dependence is a result of that airline's concentration at the Minneapolis/St. Paul airport.

I look forward to continued examination of the airline industy. When Congress passed the Airline Deregulation Act, its stated goal was to provide "adequate, economic, efficient, and low-price service by air carriers." There is clear evidence that this lofty ideal has been replaced by the corporate greed of some of our nation's major air carriers who exploit the traveling public.

This will not be the last time this committee looks at the detrimental effects of airline deregulation. I have asked the GAO to further examine fares at small and medium size cities that must use hub airports to make connections to other flights. This phase of the airline concentration study should be completed this fall.

I comment my colleague from Missouri for his leadership in this area. Mr. Chairman, thank you for scheduling this hearing.

I would say there is an additional problem here that has not been discussed and that is to the smaller cities and towns that feed into and out of the hubs. A passenger virtually becomes a prisoner in a hub airport if anything goes wrong with one of the small carriers and the large airlines are taking advantage of passengers in this area.

For example, last winter I had a constituent who was en route to Rapid City, South Dakota. He and his wife got to Minneapolis, where they had to wait two days. It was a weather problem and the flight they were scheduled to be on was cancelled. The airlines collapsed other flights together. The flights were full. There was no effort to put on additional flights or to provide any additional service.

I myself have been captured in the St. Louis Airport. When my flight was late because of weather it missed the connecting flight and the next flight was full and the airlines had me there as a captive payer.

There is no effort to provide a service and so the people going to Sioux Falls, Rapid City and to small cities are prisoners in hub airports. They are the forgotten traveler and the efforts of the airlines to provide any additional service for them is almost nil.

I was one of those who voted against airline deregulation 11 years ago. I was here in Congress. It is not just the fares into the hubs. What is happening is a very serious thing for the traveler to the smaller city and then town, and that is true in upstate New York, it is true in parts of California.

Once you try to fly from a hub airport to a smaller city, you have great problems and there is no financial incentive for any of the airlines to provide any better service, because you are captured there. They might give you an overnight hotel ticket, or a meal ticket, but they are not going to put on an additional flight or provide any additional service and it is becoming something that people are very upset with.

So I have requested an addition GAO report to further examine service and fares at smaller and medium-sized cities. It costs more to fly across my State of South Dakota than it does to fly across the United States in some instances and I think that—and I find the same thing is true in other states.

I find it true in upstate New York. I find it true if you are going to travel to Sacramento, California from Los Angeles. It is true in a lot of places that are nonhubs that are connected to hubs, and merely they are captive travelers and being taken advantage of and I think if the airlines do not do something about it, the Congress should.

Thank you, Mr. Chairman.

Senator McCain. Mr. Chairman, in keeping with my friend's last statement and the conversations we have had, perhaps after we investigate this we could investigate airline food as well.

Senator Ford. I have already investigated that and I have my opinion.

I have an opening statement that Senator Hollings would like to have included in the record:

[The statement follows:]

Opening Statement by the Chairman

For nearly 11 years—since enactment of the Airline Deregulation Act—we have debated the course of airline fare levels. Expert after expert has presented evidence to this Committee extolling the virtues of airline deregulation, focusing on the billions of dollars in savings purportedly realized by air travelers.

This is one Senator that has never subscribed to evidence presented by these so-called experts. Any air traveler can give you the results of their "expert" analysis—first-hand information on how fares have increased under deregulation. For years, I have maintained that airline fares are going up, up and away. Airline fares in South Carolina have taken off faster during the last decade than a supersonic plane ever could.

It is for that reason that I await today's hearing and the results of the General Accounting Office study on fares at concentrated hub airports. I expect that the GAO study will once and for all make it clear that air travelers have been hurt by the increasing trend of airline concentration.

Deregulation and the policies of the past eight years have allowed a select few airlines to exploit the pocketbooks of the millions of air travelers.

Certainly, we can't go back and break up the mergers that enabled the airline industry to reach this perilous situation. Rather, we must look ahead. It is the responsibility of this Committee to have a complete understanding of the airline industry and where it is headed. Accurate and complete information will enable us to act to ensure the availability of quality, affordable service for airline passengers.

Today's hearing on concentration at hub airports is a critical aspect of this oversight responsibility. But I look forward to our review later this year of on-going GAO studies into barriers to entry at major airports, and changes in airline fares at small and medium-sized communities since enactment of airline deregulation.

I intend to continue my efforts to ensure the protection of the 450 million air travelers who fly every year. If need be, I am committed to proposing legislation to ensure adequate airline competition, and to protect the traveling public from the growing monopolistic threat of the airline industry.

Senator Ford. We are very pleased to have Kenneth Mead, Director of Transportation Issues, from the General Accounting Office to testify today. I know the names of your two colleagues, Mr. Mead, but if you will identify them for the record, I would appreciate it. We look forward to your testimony and we will have some questions for you. You may proceed.

STATEMENT OF KENNETH M. MEAD, DIRECTOR, TRANSPORTATION ISSUES, GENERAL ACCOUNTING OFFICE; ACCOMPANIED BY JAMES NOEL; AND FRANK MULVEY

Mr. Mead. Thank you, Mr. Chairman. We appreciate the opportunity to testify on our on-going work examining changes in the airline industry. James Noel, on my left, directs all of our work in the economic deregulation area across all transportation modes. Frank Mulvey, on my right, has directed this particular project.

I would also like to recognize for the record four other individuals who have helped materially in this effort. Dr. Jack Wells, Kim Coffhan, Sandy Weiss, and Tom Noone who were our principal analysts.

Mr. Chairman, we have examined airline yields at 15 concentrated airports, those where one or two airlines dominate the traffic. Our analysis covers fares paid by approximately 25 million travelers between 1985 and 1988. We also reviewed changes in service levels at these airports.

Last fall, we reported our findings on fares and service at St. Louis following the Trans World-Ozark merger. At Senator Danforth's request, we have extended this analysis to include fares and service at 15 concentrated airports around the nation.

We considered an airport concentrated if one airline handled 60 percent or more of the passengers enplaning at the airport, or if two carriers handled 85 percent or more of all the passengers. All but one of the 15 airports are hubs for one or more of the major airlines.

At nearly all of the 15 airports one airline handled between 60 percent and 90 percent of all traffic. We examined yield changes from the first quarter of 1985 through the fourth quarter 1988, the most recent quarter for which data is available.

Senator **Danforth**. Mr. Chairman, I hate to interrupt, but you have used the word yield, which I am not sure is obvious to all of us and I notice it is also in your chart and I wonder if you could establish for us what the meaning of the word is.

Mr. **Mead**. Thank you.

Senator **Ford**. You have to watch these former attorneys general.

Mr. **Mead**. By yield I mean the fare paid per passenger mile between the origin and destination airport and I will try to put the English definition in as I use the term throughout the testimony.

We excluded airports that met our concentration criteria but were in multi-airport cities. We did that because we were trying to ascertain what the effects of concentration are. Presumably, in those markets where you have two or three airports the effects of concentration will be less because consumers have a greater choice.

We contrasted the airline fares at the 15 airports with those of a control group of 38 unconcentrated airports. We also compared the fares received by the dominant airlines with those of other airlines serving the concentrated airport.

We focused on yield levels and changes at airports where concentration increased due to a merger, where it resulted from establishing or building up a hub, or where the airport was concentrated throughout the period we reviewed. Finally, we examined what has happened to the amount of service and the amount of competition at concentrated airports. I will briefly summarize our findings.

With respect to yields, which are the fares paid per passenger mile, they are higher at concentrated airports. In 1988 the average yield at the 15 concentrated airports was 27 percent higher than the average at the unconcentrated airports. At nine of the airports it was 40 percent or more above the yield at the unconcentrated airports and at five it was more than 60 percent higher.

The yields of the dominant airlines at the concentrated airports were usually higher than the average yield at the unconcentrated airports. At 13 of the 15 concentrated airports, the yields of the dominant airlines were higher than the other airlines serving the airport.

Fare per passenger mile, or yield, rose following mergers of competing airlines at two of the airports we examined—St. Louis and Minneapolis-St. Paul. Airlines with hub operations at the airports merged. Both mergers occurred in late 1986 and in both cases yields increased following the merger.

Between the first quarter of 1986 and the first quarter of 1988, Northwest yields at Minneapolis-St. Paul rose 25 percent, while Trans World's yields at St. Louis rose 29 percent. Over the same time period, the yields at the unconcentrated set of airports rose only 9 percent.

Fare per passenger mile, or yield, also rose following the establishment of a dominant hub. For example, American Airlines set up hubs at Nashville in the spring of 1986 and at Raleigh/Durham in the summer of 1987. In both cases, American Airlines' yields had been much lower than those of other airlines serving Nashville and Raleigh/Durham, but after American became the dominant carrier, its yields rose much faster than those of the other carriers.

However, in setting up its hubs at Nashville and Raleigh/Durham it is important to note that American greatly increased the number of short-distance flights it offered. Since short-distance flights have higher yields, the change in traffic mix accounts for at least some of the observed increase in American's yields.

Fare per passenger mile, or yield, increased, Mr. Chairman, as concentration increased, even in cases where the airport was dominated by a single carrier throughout the period we reviewed. For example, yields at Delta Airlines' hub in Cincinnati and Piedmont's hub in Charlotte rose as the market shares of the dominant carriers increased.

Between the fourth quarter of 1985 and the fourth quarter of 1988, Delta's share of enplanements at Cincinnati rose more than 35 percentage points and its yields increased 32 percentage points. Piedmont's share of enplanements at Charlotte increased about 15 percentage points, while its yields rose 32 percent. During the same period the yields at unconcentrated airports rose less than 13 percent.

To assess changes in service levels at concentrated airports between 1985 and 1988, we examined the number of cities that could be reached by direct service—that is, without a change of plane—the total number of daily flights to all places, and the amount of competition, as measured by the number of markets served by one carrier, by two or three carriers, or by four or more carriers.

Here is what we found. There was a 10 percent increase in the number of places served directly. From the 15 concentrated airports the dominant carriers increased the number of destinations served directly at all 15 airports, but there was nearly a one-third decline in the number of destinations served by other carriers.

The number of daily flights at the 15 concentrated airports increased by 3 percent. While the total daily departures of the dominant carriers grew 50 percent, those of the nondominant airlines fell by 47 percent.

Finally, travelers on many routes have seen their choice of airline narrow. From 1985 to 1988, there was a 25 percent increase in the number of domestic destinations from the 15 concentrated airports that were served directly by only one carrier. In contrast, the number served by four or more carriers fell by more than 50 percent.

Mr. Chairman, over the past few years there have been numerous mergers and bankruptcies that have reduced the number of competing airlines. While there continues to be vigorous competition on many heavily-traveled routes, growing concentration, especially at concentrated hub markets, has led to less competition on many routes.

The issue before the Congress is whether or not there are steps that need to be taken to revitalize competition in markets where competition has been reduced. The focus of our analysis has been on airline concentration and how concentration in certain markets might lead to higher fares and to the erosion of the benefits of deregulation in those markets.

In another work that we plan to complete later this year, we will be examining whether certain changes in airline operating and marketing practices have made it more difficult for new carriers to enter airline markets and successfully compete for traffic, or for even existing carriers to expand their operations in markets dominated by other airlines.

To the extent that such barriers to competition are a problem, we will review the options for reducing or eliminating them. Our overall concern is that if competition cannot be preserved, then the benefits of deregulation to the traveling market will be lost in the affected markets.

Mr. Chairman, we will be glad to take any questions you may have.

[The statement follows:]

United States General Accounting Office

GAO Testimony

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Air Fares and Service at Concentrated Airports

Statement of
Kenneth M. Mead
Director, Transportation Issues
Resources, Community, and Economic
Development Division

Before the
Subcommittee on Aviation
Committee on Commerce, Science, and Transportation
United States Senate

Mr. Chairman and Members of the Subcommittee:

We appreciate the opportunity to testify on our on-going work examining changes in the airline industry. At the request of Senator Danforth, Ranking Minority Member of the Committee on Commerce, Science and Transportation, and the Chairman of the House Subcommittee on Aviation, Committee on Public Works and Transportation, we have examined air fares at 15 concentrated airports--those where one or two airlines dominate the traffic--and compared them to fares at 38 unconcentrated airports. Our measure of fares is the yield, the fare paid per passenger mile of travel.[1] Our analysis covers fares paid by approximately 25 million travelers between 1985 and 1988. We also reviewed changes in service levels at the concentrated airports during the 1985-88 period.

In addition to this work, we are examining whether changes in airline operating and marketing practices have erected barriers to entry around concentrated airports and how such barriers might be reduced or eliminated. At the request of the Chairman and other members of the Committee on Commerce, Science and Transportation, we are also examining trends in fares at small and medium-sized communities.

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[1] Passenger miles are the straight line distances between the origin and destination, regardless of the route taken by the individual airlines.

Our work on fares and service to date shows that:

-- Yields at concentrated airports are higher than yields at unconcentrated airports. In 1988, the average yield for the concentrated airports was 27 percent higher than the yield at the comparison airports.

-- At 13 of the 15 concentrated airports, yields of the dominant carriers are higher than the yields of other airlines serving those airports.

-- Yields of the dominant carrier at concentrated airports usually rose following the establishment of the dominant position.

-- The number of destinations served directly from concentrated airports increased 10 percent and the number of daily departures increased 3 percent between May 1985 and May 1988, but these increases are comprised of large increases by dominant carriers, offset by large service reductions by the other carriers serving the concentrated airport.

-- The number of destinations served directly from concentrated airports by only one airline rose 25 percent, while the number of destinations served by four or more airlines fell 52 percent.

BACKGROUND

Over the past few years, there has been a trend toward one or two airlines establishing a dominant position at many major airports. There are several reasons why airports become concentrated. In some cases, airlines serving an airport merge and the surviving firm inherits most of the traffic. A more common cause of concentration results when an airline decides to make a particular airport a hub for its operations. With a hub, an airline brings travelers from many points to a central location, and then transfers them to other flights to their final destinations. Such transfers are generally made in a relatively short period of time. Hubbing generates important operating efficiencies, but it can also lead to substantial market power for the airlines, which could lead to higher fares and reduced levels of service.

In a recent report, we examined fares and service at St. Louis before and after the merger of TWA and Ozark Air Lines.[2] Before the merger, TWA handled 56 percent of the enplanements, but after the merger, TWA had 82 percent of the enplanements at St. Louis.[3] We found that TWA's fares for flights out of St. Louis rose substantially following the merger compared with fare changes elsewhere. We also found that the number of carriers competing for traffic at St. Louis declined. More routes were served by only a single carrier, usually TWA, and far fewer routes were served by four or more carriers. Our fare findings for St. Louis were later confirmed in an analysis by the Department of Transportation (DOT).[4]

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[2] Airline Competition: Fare and Service Changes at St. Louis Since the TWA-Ozark Merger (GAO/RCED-88-217BR).

For our on-going work, we extended our St. Louis analysis to include fares and service at 15 concentrated airports around the nation. We selected airports for analysis from among the 75 busiest on the basis of enplanements.[5] Our methodology is described in more detail in appendix I. All but one of these 15 airports (listed in appendix II) are hubs for one or more of the major airlines.[6]

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[3] Enplanements are passenger boardings at the airport, and include both originating and connecting traffic.

[4] U.S. Department of Transportation, A Comparison of Air Fares and Services at St. Louis Before and After Trans World Airlines Acquired Ozark Airlines (sic), Washington, D.C., January 1989.

[5] Because of their unusual geographic characteristics, we excluded airports in Alaska and Hawaii.

[6] Piedmont Airlines (now part of USAir) is the dominant carrier at Greensboro, NC, but Piedmont does not operate a hub there.

We examined fare changes from the first quarter 1985 through the fourth quarter 1988, the most recent quarter for which data are available. Service data are for the month of May of each year. Between 1985 and 1988, a number of important mergers were consummated and several hubs were established or built up.

We contrasted levels and trends in yields on routes from the 15 concentrated airports with yields on routes from a control group of 38 unconcentrated airports (listed in appendix III). The control airports are those in the top 75 airports in the contiguous 48 states that did not meet our definition of concentration and were not in multi-airport cities.[7] We also compared the yields received by the dominant airlines at the concentrated airports with the yields earned by the other airlines serving the airport in order to further isolate the effects of dominance.

YIELDS ARE HIGHER AT CONCENTRATED AIRPORTS

In 1988, the average yield at the 15 concentrated airports was 27 percent higher than the average yield at the comparison airports. At 14 of the 15 concentrated airports, the combined yield for all the airlines at each airport was higher than the average yield at the unconcentrated airports. The yields of the dominant airlines at the concentrated airports were consistently higher than the average yield at the unconcentrated airports. At 13 of the 15 concentrated airports, the yields of the dominant airlines were higher than the other airlines serving the airport; at 10 of the airports the yields were considerably higher. Appendix IV provides the details of the results for each of the 15 airports.

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[7] Some of the airports in our control group are hubs (e.g. Phoenix), but they are not concentrated by our definition.

On average, yields at the unconcentrated airports declined from 14.7 cents per passenger mile in the first quarter of 1985 to around 12.4 cents in the second quarter of 1986 and remained at about that level through the second quarter of 1987. After that, yields at the unconcentrated airports began to increase and reached 15.2 cents by the end of 1988.

Between 1985 and 1988, yields at most of the concentrated airports also fell, then recovered. However, rather than merely recovering to their initial levels, yields at the concentrated airports were often much higher in 1988 than they were in 1985. Comparing the fourth quarter of 1988 with the fourth quarter of 1985, yields were higher at all of the concentrated airports, with increases ranging from about 2 percent to about 35 percent.

Yields Rose After Dominance Was Established

At two of the airports we examined, airlines that were hubbing at the airport merged. TWA's acquisition of Ozark Air Lines eliminated a hubbing competitor at St. Louis, and Northwest's takeover of Republic Airlines eliminated a hubbing competitor at Minneapolis-St. Paul. Both these mergers were proposed in early 1986 and occurred in late 1986 and yields increased in the year following the mergers. Between the first quarter 1986 and the first quarter 1988, Northwest's yields at Minneapolis-St. Paul rose 25 percent while TWA's yields at St. Louis rose 29 percent. Over this same time period, yields at the unconcentrated airports rose only 9 percent.

At airports where a carrier established a dominant position during the period we examined, yields rose following the increase in concentration. For example, American Airlines set up hubs at Nashville in the spring of 1986 and at Raleigh-Durham in the summer of 1987. In both cases, American's yields increased following the establishment of hub operations. American's yields had been more than 20 percent below those of other airlines serving Nashville and more than 30 percent lower than others serving Raleigh-Durham before the hubs were set up. After American became the dominant carrier, its yields rose much faster than those of the other carriers, and by the fourth quarter 1988, American's yields at Nashville were about 9 percent higher than other carriers, and had closed almost all the gap at Raleigh-Durham.

In setting up its hubs at Nashville and Raleigh-Durham, American greatly increased its number of short distance flights.

Between the fourth quarter 1985 and the fourth quarter 1988, the share of traffic in the 0 - 500 mile category increased from less than 1 percent to 18 percent in Nashville. Between the fourth quarter 1986 and the fourth quarter 1988, the share of traffic in the 0 - 500 mile category grew from 9 percent to 20 percent in Raleigh-Durham. Since short distance flights have higher yields, the change in traffic mix accounts for at least some of the increase in fares.

Already Dominant Airlines Maintained Higher Yields

In situations where the airport has always been dominated by a single carrier, there appears to be a positive relationship between concentration and yields. For example, yields at Delta Airlines' hub in Cincinnati and Piedmont Airlines' hub in Charlotte rose as the market shares of the dominant carrier increased. Between the fourth quarter 1985 and the fourth quarter 1988, Delta's share of enplanements at Cincinnati rose more than 35 percentage points and Delta's yields increased 32 percent at Cincinnati. Piedmont's (USAir) yields at Charlotte also rose 32 percent as its share of enplanements increased 15 percentage points. During the same period, yields at unconcentrated airports rose less than 13 percent. Western Airlines had its hub at Salt Lake City before it was taken over by Delta. Yields declined from the fourth quarter 1985 through the second quarter 1986. Delta proposed its purchase of Western in the third quarter 1986. Since

Delta took over the hub at Salt Lake in early 1987, yields have risen as Delta has increased the share of enplanements held by the dominant carrier.

At airports where concentration levels were high, but remained relatively unchanged during the period we examined, yields did not increase; nevertheless, they remained above yields at unconcentrated facilities. At Pittsburgh, USAir has had 80 percent or more of the enplanements during almost the entire period under review. Its yields declined somewhat over this period, but by the fourth quarter 1988 had returned to slightly above the initial level. The decline may have reflected changes in the distribution of USAir's traffic. The proportion of passenger miles flown in the lowest distance/highest yield category (0 - 500 miles) fell from 43 percent to 31 percent between the fourth quarter 1985 and the fourth quarter 1988.

Cities with Two Dominant Airlines Provide Additional Perspective

At the Atlanta and Denver airports, two airlines dominate the traffic. At Atlanta, Delta Airlines handled almost 60 percent of the enplaning passengers while more than one-third were handled by Eastern Airlines. Overall, the two-carrier concentration level was unchanged over the period we examined, although Delta had increased its share somewhat relative to Eastern. The increase in yields was relatively small. Also, as at most of the other concentrated airports, fourth quarter 1988 yields at Atlanta for the dominant carriers were substantially higher than yields at the unconcentrated airports--57 percent for Eastern and 75 percent for Delta. Overall yields at Atlanta were higher than those at any of the other 15 concentrated airports. In addition, the yields for Delta, the larger carrier, were consistently higher than Eastern's.

Both United Airlines and Continental Airlines operate hubs at Denver. Before the third quarter 1986, Frontier Airlines also had a major presence at Denver and yields at Denver ranged from 9 to 26 percent below the average for the comparison group. After Continental took over Frontier, yields at Denver increased. By the fourth quarter 1988, yields at Denver were 8 percent above those of the comparison airports. Nonetheless, yields for Denver originating traffic were lower than those of any other concentrated airport except Detroit.

Several Factors Could Affect Yield Differences

There are factors, in addition to concentration and market power, that could account for the yield differences between concentrated and unconcentrated airports and between dominant and other airlines at the concentrated airport.

One factor that might account for the differences between the airports is length of haul. We compared yield levels and changes at the 15 concentrated airports with yield changes at a subset of our control group of airports that excluded airports where average trip lengths were much longer than those of the concentrated airports. We excluded airports with longer average trip distances (greater than 900 miles) because yields are generally lower for longer trips. When we compared the 15 airports to this smaller control group of 22 airports, the difference in yields narrowed, but the change was not large and our findings were unchanged.

In preparing our testimony, we spoke with the dominant airlines. They noted that yields could be higher at the concentrated hub airports than at the unconcentrated ones because more of the traffic out of the concentrated airports was non-stop or direct, while traffic out of the unconcentrated airports often must connect at hubs. Non-stop or direct service is more desirable and could command higher fares than connecting service. While we did not control for this directly, we did compare the average number of coupons per traveler out of the concentrated airports with the average number at the comparison airports. For the fourth quarter 1988, the average number of coupons was 2.26 for the concentrated airports and 2.28 for the comparison airports. This suggests that the type of service was not different for the two groups of airports.

Regarding the difference between the dominant airline and the other airlines at the concentrated airports, traffic of the other carriers may be connecting at other hubs while the dominant carrier provides non-stop or direct service. In addition, dominant airlines may have a higher proportion of higher yield, short haul traffic.

While we did not adjust for the proportion of traffic carried by the dominant and nondominant carriers in calculating the average yield, we did break down the yield data into mileage blocks using 500 mile increments. We found that for the shortest haul mileage category (0 -500 miles) the dominant airlines' yields were consistently higher than the comparison airports and that at 11 of the 15 airports the dominant airline was higher than the other airlines. In the longest mileage category, these differences persisted. This suggests that even though the dominant airlines may have a higher proportion of the short haul traffic, their higher share does not account for all of the difference in average yield. We will address these issues further in a subsequent analysis.

CONSUMERS HAVE FEWER CARRIERS TO CHOOSE FROM ON MANY ROUTES

To assess changes in service levels at concentrated airports, we compared service level data for the months of May 1985 to 1988 on three dimensions:

-- The number of cities that could be reached by direct service, i.e., without a change of plane.

-- The total number of daily flights to all places.

-- The amount of competition as measured by the number of markets served by one carrier, by two or three carriers, or by four or more carriers.

The quantity of service improved at places where airlines established or built up their hubs. Nashville, Cincinnati, Charlotte, Memphis, and Raleigh-Durham are all airports where hubs were established or built up during the 1985-88 period and all but one registered large increases in the number of places served directly.[8]

Overall, we found that the number of destinations served directly increased at 10 of the concentrated airports, declined at 3, and remained about the same at 2. There was a 10 percent increase in the number of places served directly from the 15 concentrated airports. The dominant carriers increased the number of destinations served directly at all 15 airports, but in many cases much of this increase was offset by reduced service from other carriers. There was nearly a one-third decline in the number of destinations served by carriers other than the dominant airlines at the concentrated airports (see appendix V fig. V.1).

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[8] Charlotte registered a 7 percent increase in places served, while the increases for the other airports ranged from 15 to 55 percent.

The number of daily flights at the 15 concentrated airports increased by 3 percent between May 1985 and May 1988, but again the results for the dominant and the nondominant firms differed dramatically. Total daily departures of the dominant carriers grew 50 percent, while those of the nondominant airlines fell 47 percent (see appendix V fig. V.2).

Finally, on many routes travelers' ability to chose among airlines has narrowed over time. From 1985 to 1988, there was an overall increase of 10 percent in the number of domestic destinations for the 15 concentrated airports. However, there was a 25 percent increase in the number of domestic destinations from the 15 concentrated airports that were served directly by only one carrier. In contrast, the number served by four or more carriers fell more than 50 percent (see appendix V fig. V.3).

CONCLUSIONS

Our review focused on trends in fares and services at 15 airports around the nation dominated by one or two carriers. We found that dominant airline yields at these concentrated airports were consistently higher than yields at a control group of unconcentrated airports, and that for two-thirds of the concentrated airports the yields received by the dominant carrier were considerably higher than the yields earned by the nondominant carriers. In addition, yields increased as concentration increased even at airports that were already highly concentrated. Controlling for differences in average length of haul at unconcentrated airports did not alter our finding that yields were higher at concentrated airports.

With respect to service offerings, we found that there were some increases in the number of places served and in the number of daily flights, but in many cases much of the increase was offset by reduced offerings from nondominant carriers. In addition, many travelers have less choice among airlines as more markets are being controlled by a single airline.

Overall, deregulation has led to lower airline fares for most travelers and the establishment of hubs has allowed the airlines to realize important operating efficiencies. Over the past few years there have been numerous mergers and bankruptcies that have reduced the number of competing airlines. While there continues to be vigorous competition on the most heavily traveled routes, growing concentration, especially at hub airports, has led to less competition on many routes. The mergers and bankruptcies that led to increased concentration can not be easily undone. Thus, the issue before the Congress now is whether or not there are steps that need to be taken to revitalize competition in markets where competition has been reduced.

Our focus is on airline concentration and how concentration in certain markets might lead to higher fares and to the erosion of the benefits of deregulation. In other work that we plan to complete later this year, we examine whether certain changes in airline operating and marketing practices have erected barriers to entry and how such barriers might be reduced or eliminated. We are concerned that, if competition can not be preserved, then the benefits of deregulation to the traveling public will be lost.

That concludes my testimony. I will be happy to answer any questions.

SCOPE AND METHODOLOGY

Our basic criterion for deciding that an airport was concentrated was that one airline handled at least 60 percent of the passengers enplaning at that airport. We chose enplanement share as the criterion, but others are possible, including the proportion of originating passengers handled by one or two carriers. Airlines almost always have a smaller proportion of originating traffic than enplanements at their hubs because of the relatively large volume of non-originating, connecting passengers. When we calculated enplanement shares, we grouped together airlines under common ownership, such as Eastern and Continental or Piedmont and USAir.

In order to include at least one airport dominated by each of the major airlines, we extended our analysis to airports where two airlines controlled at least 85 percent of the enplaning passengers. A total of 22 airports met this criterion. From the total number of concentrated airports, we excluded airports that met the concentration criteria, but were in metropolitan areas served by more than one major commercial airport. Therefore, airports in New York City, Los Angeles, Chicago, Houston, Washington, D.C., San Francisco, and Dallas were not candidates even though airports in some of these cities were hubs for major airlines and met the concentration criteria. We eliminated airports in multi-airport cities because competition from carriers serving the other airport might offset, to some extent, the effects of concentration. We also eliminated one airport because it was outside the 48 contiguous states.

Because we are concerned with fares paid by travelers leaving the cities served by a concentrated airport, all of the yields calculated in this analysis are for traffic originating at the airport. To ensure that our analysis of trends in yields reflected changes in fares, as opposed to changes in the composition of the sample, we controlled for changes in the distribution of destinations, changes in the proportion of one-way and round-trip fares in the sample, and changes in the proportions of traffic on the dominant and the nondominant carriers. For each combination of fare types (one-way or round-trip), type of carrier (dominant or nondominant) and destination, we calculated the average yield for each quarter. We weighted the average yield for each combination according to the average amount of traffic for that combination over the 16 quarters.

There are other factors that might explain some of the differences in yields that are not accounted for in our analysis. For example, we did not control for the proportion of non-stop versus connecting flights offered by airlines at the concentrated and comparison airports. An airline may offer a higher proportion of non-stop service from its hub than is offered at the comparison airports. If non-stop flights are a higher quality service, the airlines may be able to charge more. Also, we have not taken into account such factors as the value of frequent flyer benefits in evaluating airline yields. We are addressing these and other issues affecting airline fares in another GAO study that will be completed later this year.

In order to improve comparability between the concentrated airports and the control group, we created a subset of unconcentrated airports that excluded airports where average trip lengths were long. Yields tend to be lower for longer flights because fares increase less than proportionately with mileage flown. Some of the airports in the control group had longer average trips.

We used the Origin and Destination (O&D) data collected quarterly by DOT in its 10 percent sample of airline tickets to make our yield comparisons. The airlines report detailed information on every tenth ticket to DOT and, after processing the data, DOT makes the data available for public use.

Unfortunately, there are a variety of reporting errors. In particular, fares are occasionally misreported or miscoded. DOT had adopted a fare screen developed by the Civil Aeronautics Board to eliminate fares that were obviously too high or too low. However, the screen had not been adjusted for many years. As a result, over time many valid fares were being excluded.[1] As part of our work on this project, we developed a new fare screen that DOT is currently applying to the latest submissions. The criteria we developed more accurately screen the O&D survey data. Table I-1 contrasts our new fare screen with DOT's original screen.

We tested to see whether the differences in yields were statistically significant. Specifically, we tested whether the average yield at each concentrated airport was higher than the average yield at the unconcentrated airports in 1988, and whether the difference between yields at the concentrated airports in 1985 and 1988 were significant. We found that all the differences were statistically significant at the .001 level except for the difference between the yield at Detroit and the comparison airports in 1988.

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[1] The Board's fare screen was used to develop SUMDOM, an internal data base. The data made available to the public and to data vendors are Databank 1A, which does not screen out incorrect fares. Users can make their own adjustments.

Table I-1: Comparison of GAO and DOT/CAB Origin-Destination Data Fare Screens

	DOT/CAB Screen		GAO Screen	
	Exclude if yield is		Exclude if yield is	
Mileage category	less than cents/mile	greater than cents/mile	less than cents/mile	greater than cents/mile
1-100	10.00	177.18	8	300
101-200	5.00	77.63	4	255
201-300	3.33	56.99	3	160
301-400	5.00	48.12	3	125
401-500	6.00	43.62	3	115
501-700	4.28	38.28	3	105
701-1000	5.00	32.93	3	80
1001-1300	4.61	29.67	3	65
1301-1600	5.00	27.75	3	55
1601-1900	4.30	26.40	3	50
1901-2200	4.54	25.34	3	40
2201-2500	4.40	24.63	3	40
>2500	4.28	23.51	3	40

To examine service levels and changes, we purchased data from the automated version of the Official Airline Guide from an airline data vendor, I. P. Sharp. Service levels include both the quantity of service available and the quality of service delivered. The quality of service delivered includes such things as the percentage of late flights or lost baggage. However, we were unable to use such measures because the data were either unavailable for appropriate time periods or did not allow meaningful comparisons. We have limited our analysis to the quantity of service available and, more specifically, to the number of routes served directly and the number of competitors on routes out of the concentrated airports. Direct service includes both non-stop service and service with stops where the passenger does not change planes.

THE 15 CONCENTRATED AIRPORTS INCLUDED IN THE ANALYSIS

Atlanta

Charlotte

Cincinnati

Dayton

Denver

Detroit

Greensboro/High Point/Winston-Salem

Memphis

Minneapolis/St. Paul

Nashville

Pittsburgh

Raleigh/Durham

Salt Lake City

St.Louis

Syracuse

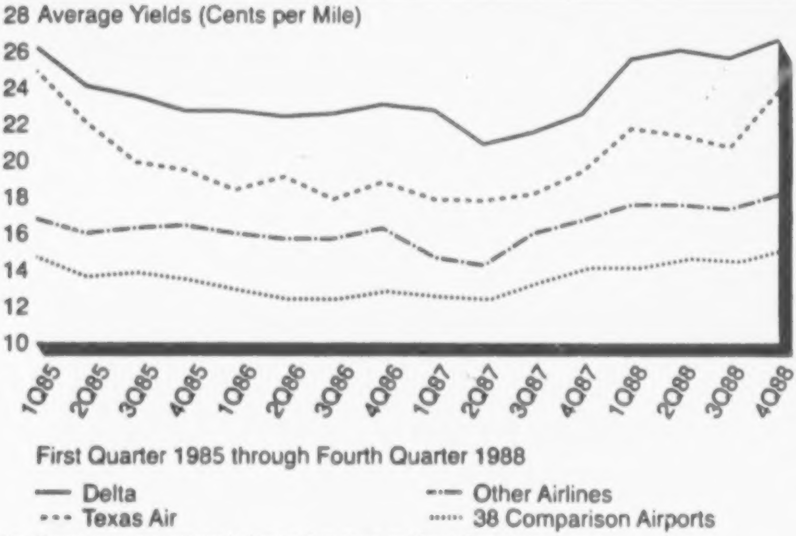
THE 38 UNCONCENTRATED AIRPORTS USED IN THE ANALYSIS

Albuquerque*
Austin*
Birmingham*
Boston
Buffalo*
Cleveland*
Columbus, OH*
El Paso*
Ft. Lauderdale
Ft. Myers
Hartford
Indianapolis*
Jacksonville*
Kansas City*
Las Vegas*
Little Rock*
Louisville*
Miami
Milwaukee
New Orleans*
Norfolk/Va. Beach*
Oklahoma City*
Omaha
Orlando
Philadelphia
Phoenix*
Portland, OR
Reno*
Richmond*
Rochester, NY*
Sacramento
San Antonio*
San Diego
Seattle
Tampa
Tucson
Tulsa*
West Palm Beach

* denotes airports in both total and smaller control groups.

GAO

Atlanta: Hartsfield Atlanta International Airport

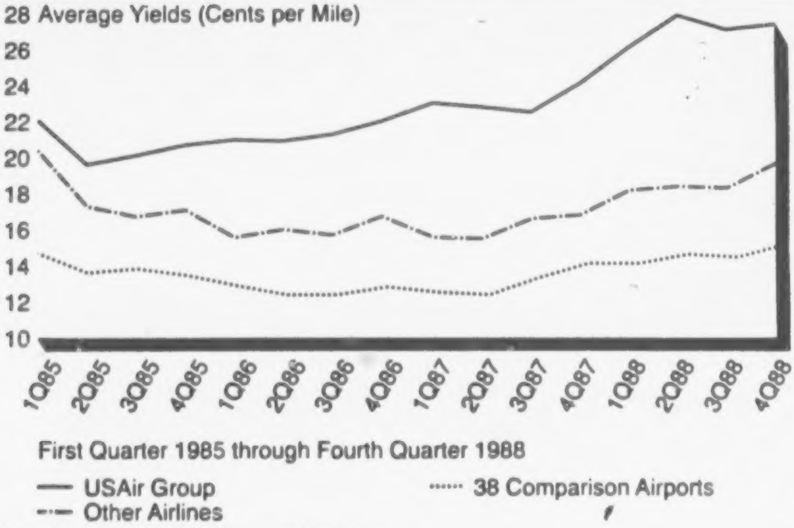


Note: Texas Air includes yield data for Eastern, Continental, and People Express.

Figure IV.1

GAO

Charlotte: Charlotte/Douglas International Airport



Note: USAir Group includes Piedmont and USAir yield data

Figure IV.2

GAO

Cincinnati: Greater Cincinnati Airport

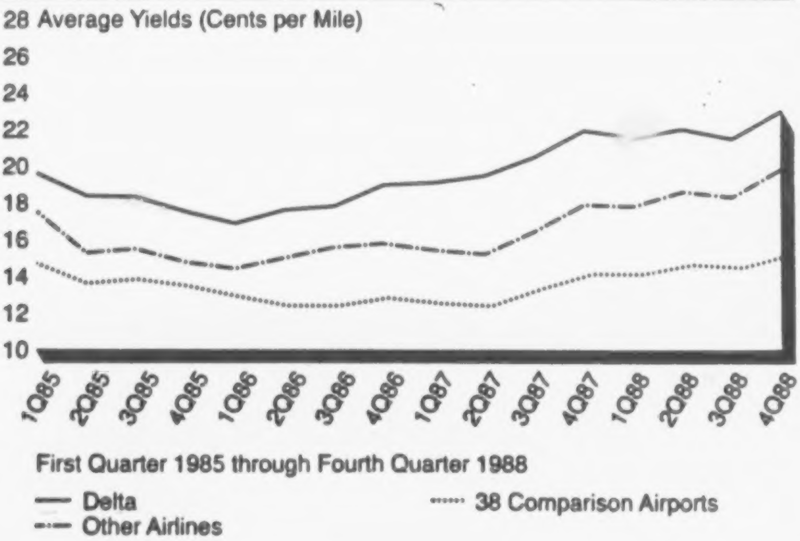
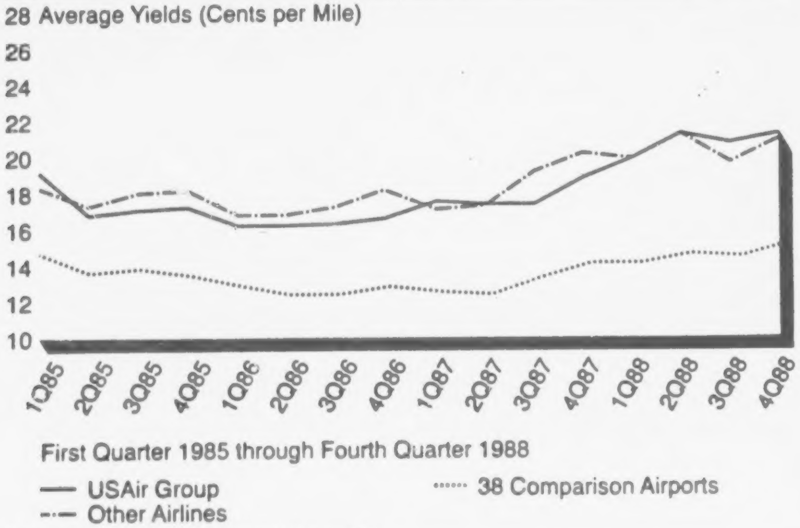


Figure IV.3

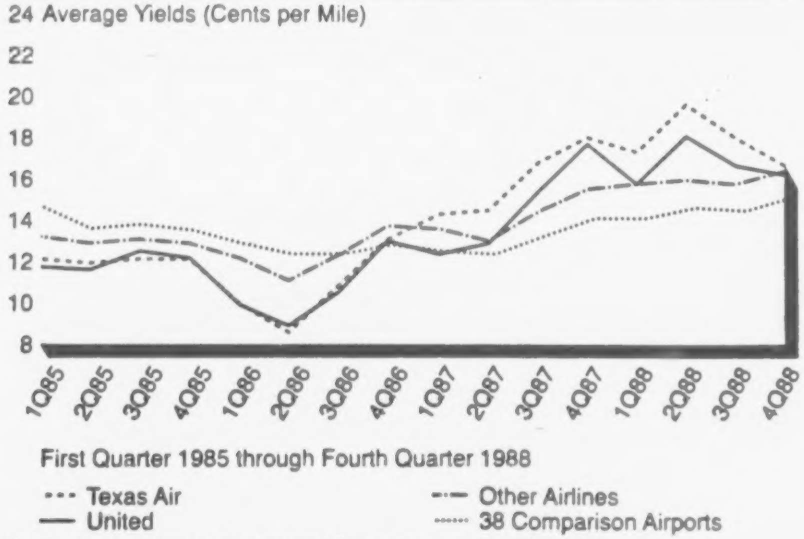
GAO Dayton: Dayton International Airport



Note: USAir Group includes Piedmont and USAir yield data

Figure IV.4

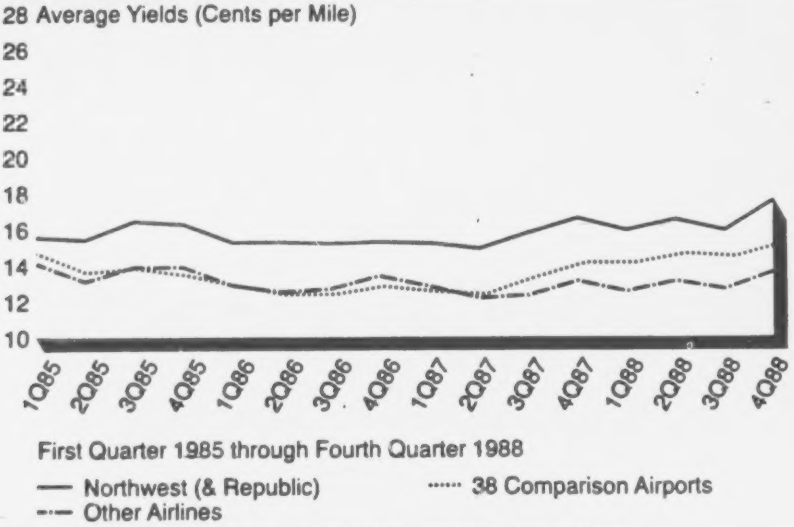
GAO Denver: Stapleton International Airport



Note: Texas Air includes yield data for Continental, Eastern, Frontier, and People Express

Figure IV.5

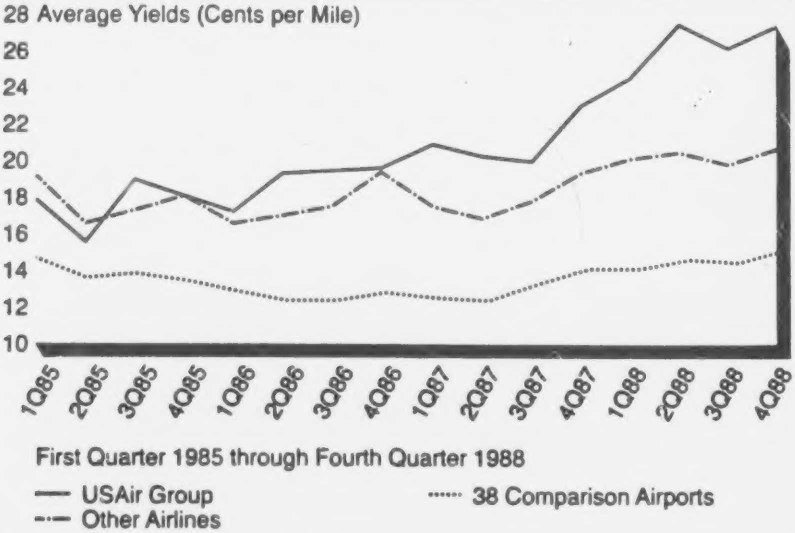
GAO Detroit: Detroit Metropolitan Wayne County Airport



Note: Northwest includes both Northwest and Republic yield data prior to their merger in late 1986

Figure IV.6

GAO Greensboro-High Point/Winston-Salem: Piedmont Triad Int. Airport

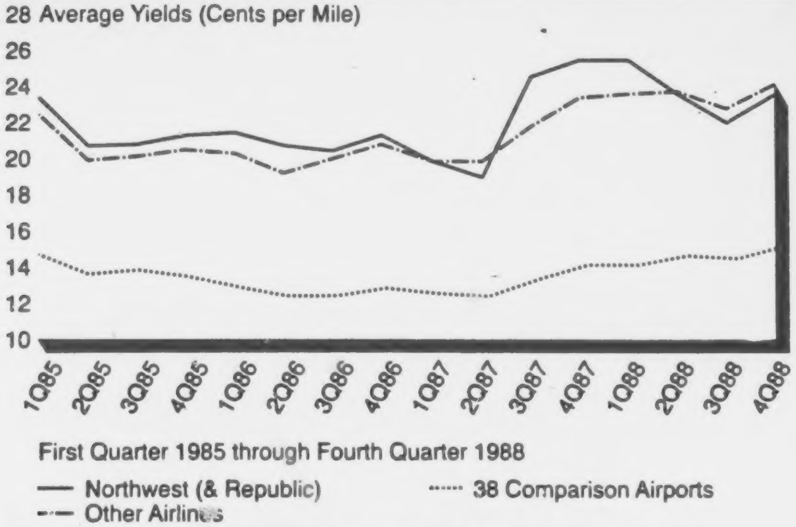


Note: USAir Group includes Piedmont and USAir yield data

Figure IV.7

GAO

Memphis: Memphis International Airport

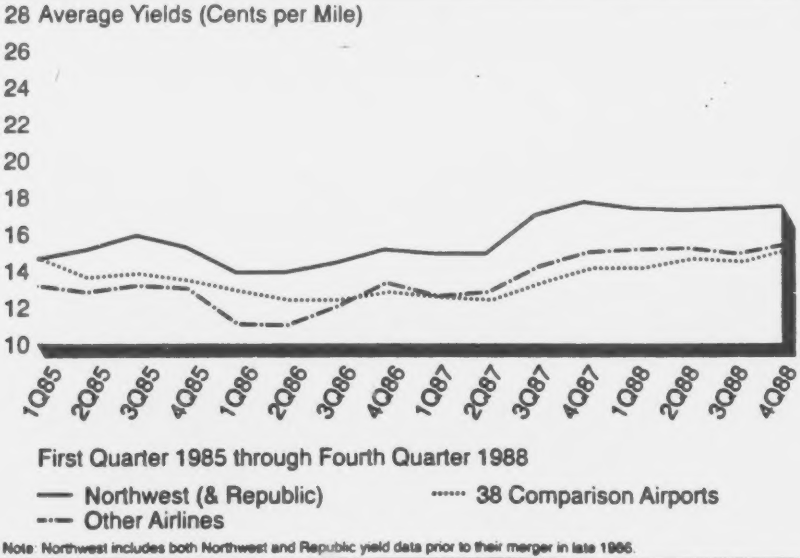


Note: Northwest includes both Republic and Northwest yield data prior to their merger in late 1986.

Figure IV.8

GAO

Minneapolis/St. Paul: Minneapolis/St. Paul International Airport



Note: Northwest includes both Northwest and Republic yield data prior to their merger in late 1986.

GAO

Nashville: Nashville Metropolitan Airport

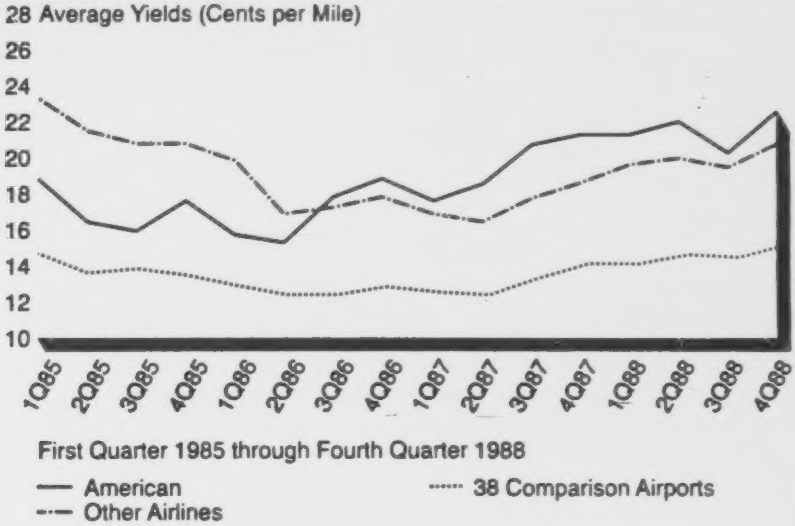
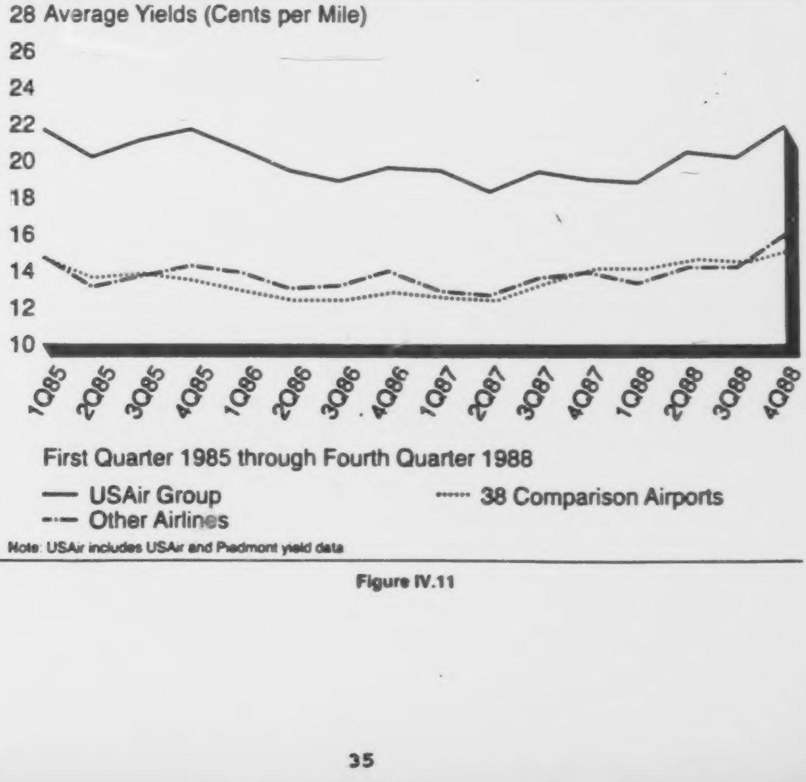


Figure IV.10

GAO

Pittsburgh: Greater Pittsburgh International Airport



Note: USAir includes USAir and Piedmont yield data

Figure IV.11

GAO

Raleigh-Durham: Raleigh-Durham Airport

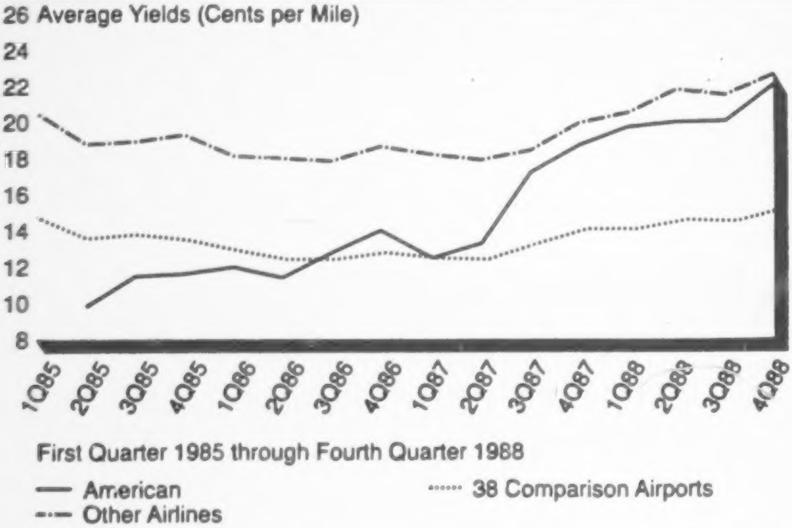
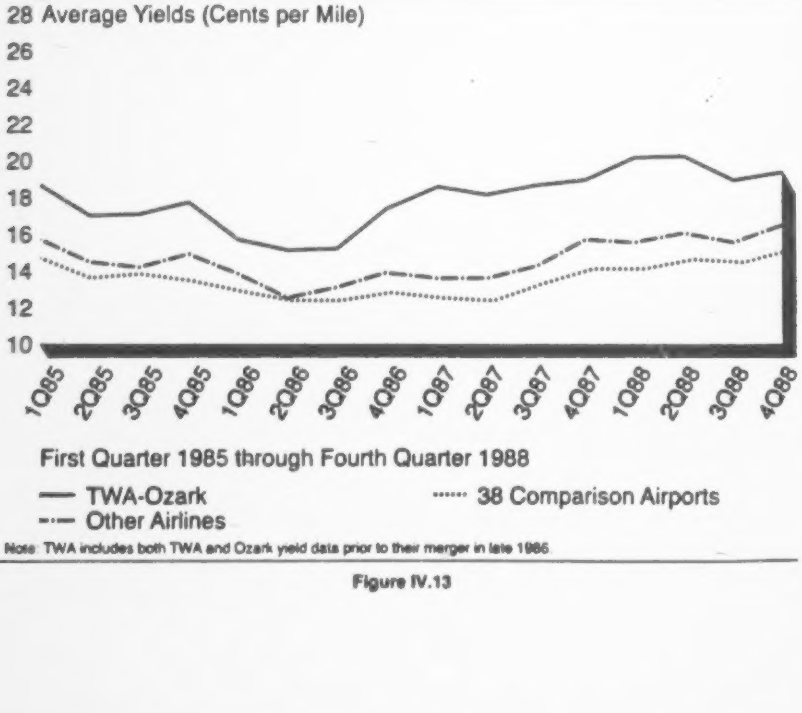


Figure IV.12

GAO

St. Louis: Lambert-St. Louis International Airport

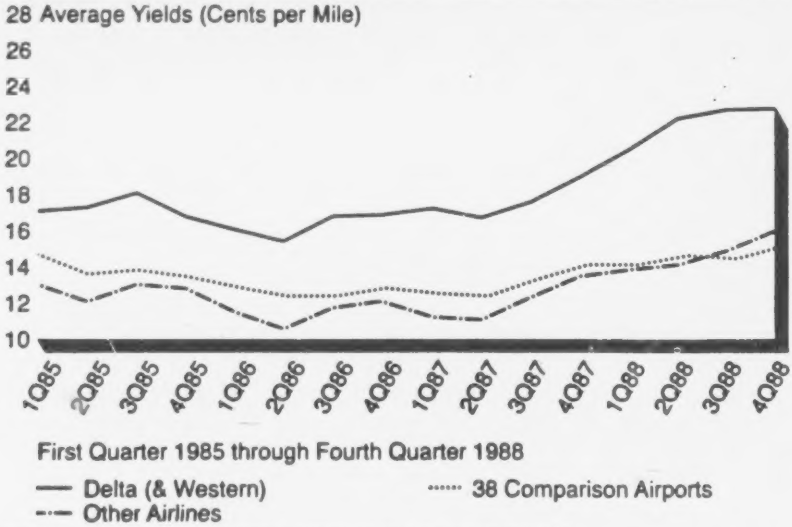


Note: TWA includes both TWA and Ozark yield data prior to their merger in late 1986.

Figure IV.13

GAO

Salt Lake City: Salt Lake City International Airport

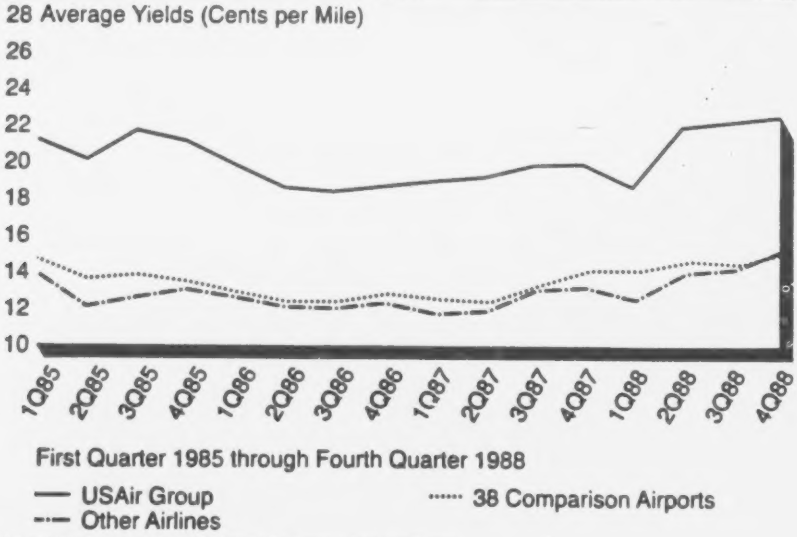


Note: Delta includes both Delta and Western yield data prior to their merger in early 1987.

Figure IV.14

GAO

Syracuse: Hancock International Airport



Note: USAir Group includes yield data for Piedmont, USAir, and Empire

Figure IV.15

GAO Average Yield for 15 Airports

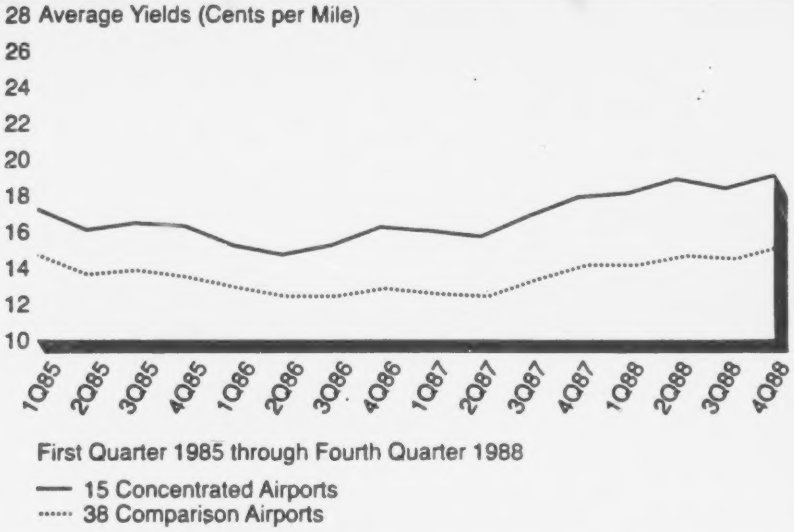


Figure IV.16

GAO Average Yield for 12 Airports Where Concentration Increased

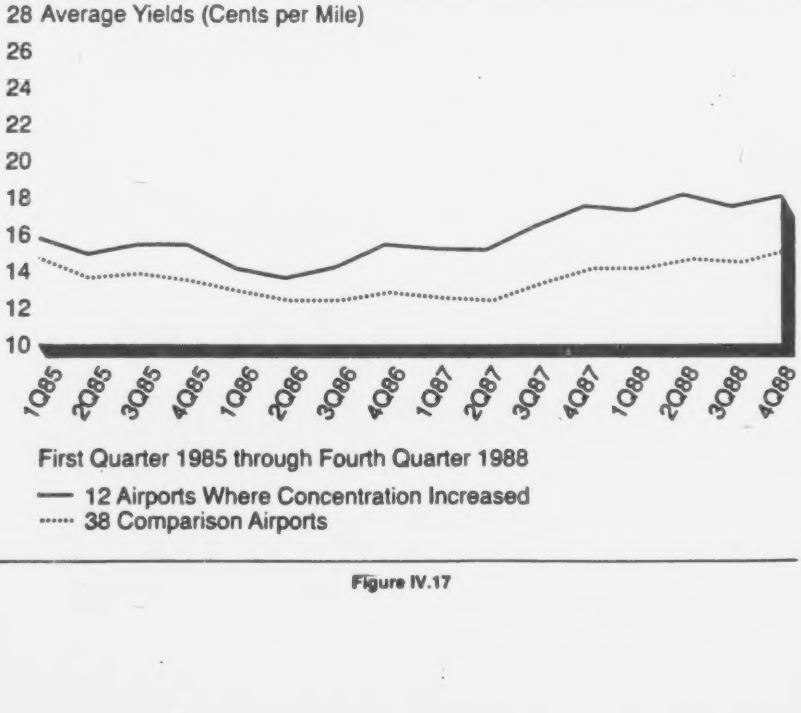


Figure IV.17

GAO

Average Yield for 22 and 38 Unconcentrated Airports

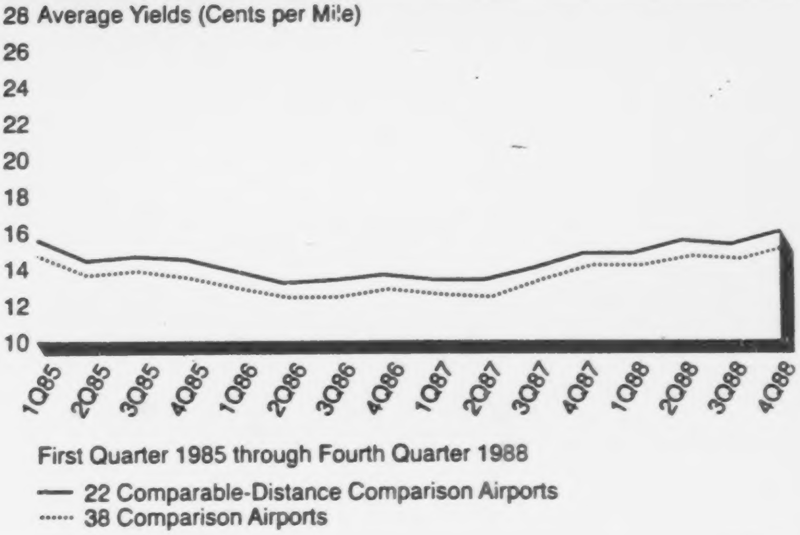


Figure IV.18

GAO

Change in Number of Direct Routes from Concentrated Airports

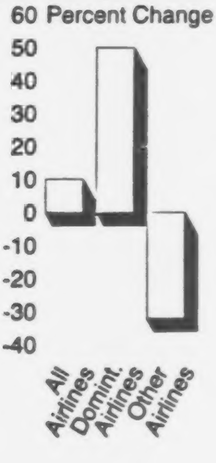


Figure V.1

GAO Change in Daily Departures at 15 Concentrated Airports

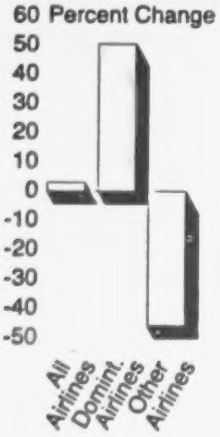


Figure V.2

GAO Percent Change in Competition on Routes at Concentrated Airports

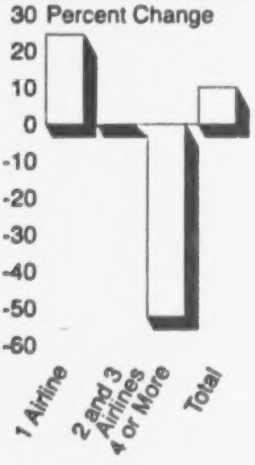


Figure V.3

Senator FORD. Thank you very much, Mr. Mead. I am sure that you will get a lot of questions and I will try not to take too long. Have you had an opportunity to review the ATA study, and the fact that it related to all hub airports, whether they be concentrated or not? I am not sure—but have you looked at ATA's report?

Mr. MEAD. Yes, we have received a copy of the ATA report yesterday afternoon and we have had an opportunity to do a preliminary review of it. It is important to note at the outset that the ATA looked at a different question than the GAO looked at. The focus of the GAO review was on concentrated airports versus unconcentrated airports. The focus of the Air Transport Association study was on hub airports versus nonhubs.

That is a very important distinction, because there are a number of hub airports that are unconcentrated. Indeed, in our study, as I noted earlier, we had 38 unconcentrated airports in our comparsion group. We had included in that group a number of the unconcentrated hub airports. So in that respect, the studies differed.

I think in terms of the basic data the ATA's raw data in their report tends to reinforce the conclusions of our review. That is, that at the concentrated airports, fares are higher. In many cases, considerably so.

Senator FORD. Your group of 38 comparison airports excluded multi-city and slot-controlled airports. What was your rationale for doing that?

Mr. MEAD. The rationale for excluding the multi-airport cities was because we wanted to try to the maximum extent practicable to isolate the effects of airline dominance and concentration. We could not do that if we were to include three airports in one metropolitan area, so they were excluded even though some of them have high concentration levels.

We presume some passengers will be able to elect a choice between the three airports in, for example, the Washington, DC area.

Senator FORD. Would the inclusion of these airports have increased your average fare?

Mr. NOEL. It is probably pretty hard to predict that. I think some of the multi-airport cities that we excluded, are important tourist destinations like Los Angeles or New York, and so in that sense they probably have a lower average fare, or yield.

Some of the airports which are in multi-airport cities, like Chicago, are also slot-controlled and there is a lot of evidence that shows that slot-controlled airports have higher yields because the supply is artificially constrained, so it would be very difficult to say how those two things would balance out.

I think the point that Ken is making that is the key here is that we wanted to get two relatively pure groups, a group that we knew was concentrated, where we could isolate the concentration, and a group that was unconcentrated, that we knew would not be affected by the things like multi-airports or slot controls.

Senator FORD. You, like many others, talk about the benefits of airline deregulation, but in going over your statement it seems to me to indicate that fares are going up and there is less competition in many routes. Where are those benefits today and who might be reaping them?

Mr. **Mead**. I think it is very important to put in context what the findings of our work to date show. Overall, the majority of travelers are still benefiting from deregulation, particularly on the heavily-traveled routes.

We are speaking here of 15 very important markets. They affect at present a significant minority, but an increasing minority of people and in that sense the people in these markets are experiencing a loss of the benefits of deregulation.

The whole premise of deregulation was greater competition. In these markets there is less competition and we believe the reduced competition is showing up in the higher fares.

Senator **Ford**. Your study relies upon yield as the best indicator of measuring the competitiveness of fares at concentrated hubs with fares at other airports.

Why did you choose yields, and is this the best indicator?

Mr. **Noel**. Let me stress first thing what we mean by yield, because I think there is some confusion as to what is meant by yield.

As Ken said at the outset in his testimony, yield here means fare per passenger mile, and so it is what it costs on average to move a person one mile in an airplane or not what it costs, but what the passengers pay.

And if we used average fares, I think the concern would be that we were not taking into account the fact that people travel different distances—by expressing this as a fare per mile—it takes that into account.

The other distinction is that people often talk about yields and what they are talking about is fare per coupon mile.

The easiest way to explain the difference is if you traveled from Los Angeles to New York, if you fly nonstop, you are going in a straight line, so the denominator in the fare per mile is that straight line distance. That is what we use, and that is what the passenger thinks about.

If you are going by way of a hub, let us say Dallas for example, you are going on the coupon mile. In other words, the miles that result if you go through the hub are obviously a longer distance. If you use coupon miles, the denominator is larger. Therefore, the yield appears to be smaller.

From the airlines' perspective, coupon miles is an important internal indicator because it shows what they are really receiving for the amount of distance their plane travels. For the passenger, the fare per straight line mile is what is important, and that is why we used what we used.

Senator **Ford**. Well, I must be on the coupon mile with what I am being charged.

I guess the industry's position that yields are higher at some airports because of differences in the average trip length. Is that what you are talking about, and did you look at any other factors that could affect airline yields?

Mr. **Mead**. Yes, we did.

Senator **Ford**. What are some of those factors?

Mr. **Mead**. Long haul routes versus short haul routes.

For example, on a long-distance route, you can expect that the fare per passenger mile are less than on a short haul route, and the reason for that is it costs the same amount of money to take off and land a plane.

If you are doing that with—in relatively short distances, then the cost for the short haul routes will be greater.

We tried to take that into account in doing our review and found that even when that is taken into account, the difference between the fares at the concentrated and the unconcentrated persist.

Senator **Ford**. Did you take a look at why they charge one price this week and another rate the next week? Is it just because of the goodness or their heart, or was it that they did not make any money and so they raised them this week?

Mr. **Noel**. I think the airlines would argue and I think our experience would show this, that their fares are relatively stable.

What varies is the availability of that fare at any one particular point in time so that as you get closer to the time of departure and your demand becomes more inelastic, you are going to have to pay a higher fare.

There will be fewer deep discount seats available for you to take. The basic idea here is through making you stay over a weekend and make you book seven, or 14 days in advance. They are partitioning the market into the people who can plan ahead and those that cannot.

Senator **Ford**. But, Mr. Noel, it does not make any difference to me. I call up Friday night, Friday afternoon, Friday morning, knowing I am going to get out around two or three o'clock on Friday afternoon, and it is like calling the IRS and getting a decision. You make ten calls and you get ten different opinions. You call and get ten different rates.

Mr. **Noel**. Senator Ford, it is going to really depend on the airline system and how they operate. Some may have a few seats available.

Some may not have any seats available, but we did not look at that issue individually in our study. In our study we did look at all of the seats that were available. Our results are what people ended up paying on average.

Senator **Ford**. Well, I am a captive shipper. I cannot get there without going through a hub.

I am not sure, but in 1975 it seemed like a round trip from my hometown was about $138. Last week it was $546. That is a pretty good jump. That is about a 400 percent increase since deregulation, and I am beginning to be concerned about it.

Did you use the local economic impact or did you take that into consideration?

When you undertook this study, did you look at the fare rate and what the economic development of a hub for a community might be? And this will be my last question, gentlemen.

Mr. **Mead**. No, we did not do an economic impact analysis on the different communities, if that was your question. No, we did not do that.

Senator **Ford**. It was just on fares, period?

Mr. **Mead**. Right.

Senator **Ford**. You raised Cincinnati Airport as one of them.

Well, the economic impact in 1973 of that community was $65 million. The Delta hub was established and it went to $683. The next two years after that it was $2.3 billion.

It is estimated to be a total contribution today of $3.3 billion to that general area. And before it became a hub, there were 3,000 employees in the Cincinnati area. Now that it is a hub, there are 5,500.

Somewhere in there the fares to the general public has to be considered. But there is a great deal of economic impact and from that hub now you have flights to Frankfurt, to London, and to Tokyo. You begin to find economic development, and you can make those runs.

There clearly is something to be said for having a hub in your community as it relates to economic development.

In order to have a hub and to increase the economic impact locally to have industrial outlets from one community to the other or one nation to the other, that hub becomes a critical point of industrial development, in my opinion.

Mr. MEAD. I think that is a very important point, and it carried over into the benefits of hubs and the importance of emphasizing that it is not hubs that are at issue here. It is the concentration levels and what happens in these different markets when there is a high concentration level.

Senator FORD. If you still did not have hubs, you are still going to have concentration of airlines today, are you not?

Mr. MEAD. But you could have more carriers competing for the same passenger.

Senator FORD. Well, it would not make much difference if they started eating each other up, you know, and you wind up with four or five major airlines.

They have got it all again anyhow, and you talk about and you hear it some more today about small airlines trying to get in and they cannot do it because of slots or some other constraint.

Senator Danforth.

Senator DANFORTH. Mr. Chairman, thank you.

Really to follow up on what you were just talking about and, Mr. Mead, you have really done an excellent job, and my questions are more mop-up questions to just make sure that I absolutely understand what you have said.

First of all you said that airline deregulation has by and large been a good thing for the traveling public.

Mr. MEAD. Yes.

Senator DANFORTH. And that what we did in 1978 was not a mistake, that when we decided that we were going to change a regulated system into an unregulated system where there was competition, that was to the benefit of the traveling public, right?

Mr. MEAD. Yes.

Senator DANFORTH. And then secondly, you have said in your testimony and again in answer to Senator Ford's question, the problem is not hubs, per se.

The fact that there is a hub does not by itself mean that there is concentration.

And, in fact, you said that you included in the study of the airports that were not concentrated, a number that were hubs.

Mr. **Mead**. Yes, sir.

Senator **Danforth**. So, therefore, if there is a problem and it would seem that a 27 percent fare increase to the traveling public where there is concentration over where there is not concentration is a problem. The problem that we have to fix is not the problem of deregulation, and it is not the problem of the existence of hubs.

The problem that we have to fix is concentration that has created higher fares. So, therefore, the narrow issue is not one of regulation versus deregulation or hubs versus the lack of hubs. The narrow issue is lack of competition because there is concentration.

Mr. **Mead**. we would agree with that.

If we look back over the last four or five years when there have been significant changes in the airline industry, over the period where we have had enormous increases in concentration and the building up of some key hubs nationally, there was relative inattention paid by the prior administration to the barriers to competition that were developing.

I believe the signs are very positive from the new Secretary of Transportation that they are moving with deliberate speed to focus on these barriers to competition—such things as frequent flier programs that allow a dominant airline to control a market.

Let us say the airline controls 90 percent of all emplanements, and it has a frequent flier program.

If you like frequent flier programs, you are likely to get vested in that airline's frequent flier program and, as a result, even more likely to continue using that airline.

I would suspect that the frequent flier programs would be one area that the Department of Transportation would be probing and one that we will be looking at in our work.

Computer reservation systems are another area. We spoke last year about how we thought that that was an area that was ripe for some regulatory attention. And, again, I think you will see Secretary Skinner moving out on that.

Senator **Danforth**. And overrides for the agents.

Mr. **Mead**. The travel agent commission overrides, and physical barriers to entry.

Senator Ford was mentioning gates at the airport. And in your state I think we found that airlines had control of these gates for many, many years.

Senator **Danforth**. And in your view, that is where we should focus and not on eliminating hubs, but on specific barriers to competition?

Mr. **Mead**. Exactly.

Senator **Danforth**. Now, can you give us some examples of airports that either are or have been hubs that are not—where there is not concentration?

Mr. **Mead**. Yes, I will just give you some that were included in our group of the unconcentrated 38. Kansas City, Las Vegas, Milwaukee, Orlando, and Phoenix.

Senator **Danforth**. And prior to the merger of TWA and Ozark, St. Louis was another example, was it not?

Mr. **Mead**. Yes, though it was very close to our definition of concentration then. I think Trans World had 55 percent of all the emplanements prior to the merger.

Senator **Danforth**. But, as I recall your earlier study of Lambert, the study showed the rapid or the significant increase in fares subsequent to the merger of Ozark and TWA.

Mr. **Mead**. Yes.

Mr. **Noel**. If we could just illustrate that point, Senator Danforth, with the chart here. As you can see, during the first three quarters of 1986 and the last quarter of 1985, TWA and Ozark were in fairly vigorous price competition with one another.

Towards the third quarter of 1986 was when the merger took place. And you can see the change in the fares subsequent to that.

Senator **Danforth**. All right, thank you.

Now, just so I can understand about what yield means again, Mr. Aaronson of the Air Transport Association was kind enough to come by my office yesterday and tell me about their study.

And you say that their study was about hubs, and your study was about concentration and so that they were two entirely different issues?

Mr. **Mead**. Yes.

Senator **Danforth**. Now, let me give you an example and ask you how this works.

Let us say that Senator Pressler wants to go to Sioux Falls, South Dakota and to get from Washington to Sioux Falls, he has to go through Lambert.

Now, did your study—what did it measure? Did it measure D.C. to St. Louis and St. Louis to Sioux Falls or how did it work?

Mr. **Mead**. It would be D.C. to Sioux Falls.

Mr. **Noel**. Excuse me.

What we measured is the fares paid by the passengers originating at the airports in question. So, your example it would be people in St. Louis trying to reach Sioux Falls or trying to reach Washington or people in any of the unconcentrated airports trying to reach their final destination.

The issue that you just raised is the one where we are doing the follow-on study for for Senator Pressler.

Senator **Danforth**. All right. But in this particular study that you are talking about that you have just completed, you are talking about people, say, who live in St. Louis and who want to get to Sioux Falls.

Mr. **Noel**. That is correct.

Senator **Danforth**. Or people who live in Washington and want to get to St. Louis?

Mr. **Noel**. No. We are looking only at originating passengers from St. Louis or any of these other airports.

Senator **Danforth**. Okay.

So, you are talking about people in St. Louis, living in St. Louis who want to go to Sioux Falls and not people who are transient?

In other words, people moving through St. Louis like Senator Pressler, who has the enviable opportunity of being able to buy things at Lou Brock's sports store at Lambert.

You are talking about people, say, who live in St. Louis and who want to fly somewhere.

Mr. **Noel**. Yes. And the reason for that is that just as you were parsing down the question to a fairly narrow issue today, so were we. The question is what is happening to fares paid by people that live at the cities that are very concentrated. We are not really concerned from a policy point of view about the people that are flying from Los Angeles to Washington because we know there is lots of competition on those routes.

Senator **Danforth**. All right. Now, as far as the people who live in St. Louis are concerned, and the inhabitants of any other hub city, the relevant measurement, the 27 percent differential is between their flights to Sioux Falls and somebody else's flights to where?

Mr. **Noel**. To wherever they are going to go. From St. Louis, wherever they would like to go, versus people in other cities with unconcentrated airports, wherever they would like to go.

Senator **Danforth**. So, you are saying that people who live in concentrated airports have to spend on average 27 percent more to get a ticket out to the same distance as people who live in an unconcentrated airport?

Mr. **Mead**. That is exactly correct.

Senator **Danforth**. That is the point you are trying to make?

Mr. **Mead**. Yes, and I am sorry I misunderstood your question earlier. I thought it was whether if people travel by circuitous route from one destination to another how did we measure the distance. We measured it was as the crow flies, which is the accepted way of measuring it.

Senator **Danforth**. But the nub of what you were saying is that if somebody lives in St. Louis or in Memphis or in Minneapolis or in Detroit or in any of the other concentrated—I think those are all concentrated—airports, are they not?

Mr. **Noel**. Right.

Senator **Danforth**. In any of the other concentrated airports, not hubs—we are not talking about hubs, but concentrated airports—if they live in one of those cities, they will pay on average 27 percent more to fly to wherever their destination is than somebody who lives in an unconcentrated city.

Mr. **Mead**. Yes.

Senator **Danforth**. Okay. Now, is that fact contested or not contested by the ATA study?

Mr. **Mulvey**. If you look at the ATA study and you look at the cities that they looked at, the hub cities they looked at, you will notice they include the 14 hubs that we looked at. If you compare our results to the ATA's findings, they are pretty similar. They find that in the concentrated airports that we looked at fares increased and increased more there than they did elsewhere. So, the findings are not inconsistent.

There are some differences in how they put together their data base and the like, so the numbers are slightly different. I would not think they were both on average 27 percent higher exactly, but in terms of fares being higher at these concentrated airports, they are both consistent.

Senator **Danforth**. Thank you very much. Thank you, Mr. Chairman.

Senator **Ford**. Senator Bryan.

Senator **Bryan**. Thank you very much, Mr. Chairman. I find myself in the same situation that you do.

Today when you travel you find that you need a Rosetta Stone to understand the air structure, the availability and convenience.

And I frequently challenge my staff to cross-examine those with whom we are dealing to find out what schedules are available and what fares are available and frequently you get conflicting answers.

So, I am perhaps a little bit more ambivalent than some members of the subcommittee on the advantages that we have derived over the years from deregulated air travel.

The focus of my question is a little bit narrower than what has previously been discussed in the colloquy and the colloquy that we have had with you, and that is assuming that you have an airport that is not a concentrated airport. And I believe that you cited by way of example one of the airports in my state.

Las Vegas is an airport that is not a concentrated airport, if I understood your testimony earlier, and Mr. Mulvey is nodding his head.

I assume that I am correct in that assumption. Am I right, sir?

Mr. MULVEY. Yes, Senator.

Senator BRYAN. We have a situation in which I would daresay many, many times across this country where to get from point A to point B from Las Vegas to Reno, the two principal cities in my state because of the distance of some 450 miles, the only practical means of communication in a business sense to get to and from in a timely fashion, that route is served by only one carrier.

Prior to deregulation there was a reasonable fare. Immediately after deregulation six carriers came in and offered services.

The fares went down to about $39 round trip, which is an extraordinary fare, I will admit.

Today that fare is $240.

And you may recall that I wrote you earlier last month and asked you to include the Las Vegas and Reno, and I would like to get a confirmation, if I may, from you, Mr. Mead. Are we going to be able to study that?

Mr. MEAD. We will, along with Senator Pressler's desires.

Senator BRYAN. I appreciate that. I do not have a Lou Brock store to wile my time away, Mr. Danforth, when—as apparently Senator Pressler does.

So, we really have a situation in which that just strikes me as being an outrageous situation and one that we need to look into.

Senator FORD. I might say, Governor, you could lose your money both places.

Senator BRYAN. Yes, that is true, and if you do not know the agent with whom you are dealing, you can lose your money as well.

Mr. MEAD. I might point out that I know Senator Pressler and Senator Hollings have both asked us to focus directly on the small/medium sized airport issue and the service and fare structures. And just getting a hold of the concentrated airports which was the first priority was an enormous challenge to us.

The data bases that had been maintained at the Department of Transportation had fallen into serious disrepair and had to be brought up to speed so that we could convey to you very legitimate results.

As I indicated at the earlier part of my testimony, to give you an idea of how extraordinary a data collection task that is we had to process over 25 million data observations, so we will be getting to yours right after this.

Senator **Bryan**. I appreciate that.

The other question that I would like to ask, did any aspect of the research or study that you did indicate the level of confusion that I think the traveling public faces with these changing fare structures with the options that are available call before Tuesday on the evening of a full moon, and the fare is *X* dollars than it is in a different time of the month? I exaggerate and share a little hyperbole with you there, but it is very, very confusing, and most folks are finding it extremely difficult to find out what the best fare is available between the point of their origin and the destination.

Mr. **Mead**. That is an important point. I would like to have Frank Mulvey here address that.

And also I might point out that this is relevant to the computerized reservation system (CRS) issue and how quickly those fares, and the most efficient economical fare, gets displayed on that screen.

Mr. **Mulvey**. We think that the large number of fares available is why there has been a big switch to travel agents. Travel agents today handle a much larger proportion of all bookings than they used to.

So, the importance of a CRS and the importance of travel agents is greatly enhanced by the complexity of the fare structure.

Senator **Bryan**. Is there anything, Mr. Mulvey, that you are doing in terms of the study or any recommendations that you may be able to share with the subcommittee at some future time as to how we might facilitate that? I mean, every member of this committee and I am sure everybody in the audience can cite examples.

A year and a half or two ago our son was going to school in Boise, Idaho. We called. No, there was not direct flight from Reno, Nevada to Boise, Idaho. Being an obedient soul, I accepted that as the wisdom of the age.

Take him down to the airport where we are going to take him to San Francisco and then back over to Boise and we have a few minutes, and I take a look down the stall, and there is a direct flight from Reno to Boise that was leaving within an hour of the time that this other more circuitous route.

I am sure that everyone can cite those kinds of examples.

And not to drag this out, but what can be done to provide better and convenient service in terms of information that people need towards making a decision?

Mr. **Mulvey**. That is a tough one. Information, of course, costs money. The airline CRS systems are, in fact, now available for home use. You can buy your own and check it out yourself. I think it is called Easy Sabre.

But realistically, that is not going to be available to very many people. The people who have the wherewithal to have access as to those kinds of information systems, are the ones who are going to benefit.

But I do not know how, what progress is being made to simplify access to the available fares.

Senator **Bryan**. Any other response?

Mr. **Mead**. It is not a pretty picture, and we do not have the solution to that.

Senator **Bryan**. I guess what you are saying, all of you, is that there are some blessings and there are some burdens with deregulation.

I guess the blessings are the number of passenger emplanements has gone up rather dramatically. More people are flying to more places than ever before in the history of airline travel, and I guess there are some indications statistically that overall with averages that maybe the overall price structure is not, has not been adversely impacted.

But there certainly are some examples within that average that would indicate that is not the case and in terms of the availability of data or information to make a decision that strikes me as being extremely confusing.

Mr. **Mead**. I do not know if you have heard this statistic, but in terms of what the published regular coach fare is, that is the exception to the rule.

In fact, I believe this is an ATA figure. They believe that 87 percent of people that are traveling now travel on discount, less than full coach fare tickets.

Senator **Danforth**. Could I follow up on that.

Senator **Bryan**. Yes, I would certainly yield.

Senator **Danforth**. You built that into your study? In other words, your study is not based on quoted, it is based on actual cost?

Mr. **Mead**. Absolutely.

In fact, when we first started doing the initial review for you, that was one of the considerations.

Should GAO focus on the published fare or not. Well, we very quickly learned nobody is paying the published fare, and so we had to use the bottom line which is what the dollar sign is at the bottom of the ticket.

Mr. **Mulvey**. In fact, the airlines will say to you that their fare structures are fairly stable.

They do make a lot of fare changes, but their fare structure is stable, and that is true, but it might be also true that the number of discount fares and the deep discount fares may not be so stable.

Senator **Bryan**. Thank you very much, Mr. Chairman.

Senator **Ford**. Senator Pressler.

Senator **Pressler**. Thank you, Mr. Chairman. Now, I have learned from this hearing, at least, what I will do the next time I am a prisoner in St. Louis.

Let me also say that following up on Senator Bryan's question about information, as I sit here, I realize I have never collected, I do not believe, a mileage bonus or a frequent flier, although I am a member of the clubs.

They do not seem to apply to flying to South Dakota. Do you know anything about that?

Mr. **Mead**. No, I cannot speak to your specific situation. I work for the government and do not collect frequent flyer coupons at all.

Senator **Pressler**. What becomes of mine?

Senator **Ford**. Check with your secretary. She will tell you how many miles you earn.

Mr. **Mead**. Senator, I know you asked perhaps half in jest, but the work that we have ongoing is trying to measure the influence of such things as frequent flier programs on fares.

For example, how powerful a marketing tool is it in your case it apparently is not that powerful because you do not use them.

In perhaps other cases such as business travelers, it may be quite important, and we are trying to quantify that as best we can.

Senator **Pressler**. Well, I would just guess sitting here that there is not very many incentives, I guess, that would be working against the smaller city passenger if ~~we~~ looked into it.

But I guess my problem is that it is the passenger to Rapid City or Sioux Falls or smaller cities have a double problem.

They have the problem of getting to the hub airport and then it is multiplied by very high rates and poor service going on from the hub airport to those areas, and that is where the fares have increased most dramatically, particularly for a person who is a captive traveler, a businessman who is going on a trip who cannot schedule it a week in advance or two weeks in advance, a person going to a funeral, a Senator returning home who does not know when the last vote is going to be, and so forth.

Now, what can we do about the problem from the hub airports to the small airports surrounding them? Is there anything that is drawn from your study or any evidence that would help us?

Mr. **Mead**. That is a difficult question because our work has not reached the point where we have specific remedies where there is concentration. In other words, where there is a concentrated airport serving a spoke. Our work has not progressed to that point, nor has the Department of Transportation's.

Senator **Pressler**. Well, for example, when you use the word service, does this measure the service such as cancelled flights, lost baggage and overall delays?

Mr. **Mead**. No, and I am glad you asked that. Our measure of service was strictly flights. New destinations, number of departures and in the longer prepared statement that we are submitting for the record that is made clear.

We did not try to get into the more qualitative things such as the meal, such as whether you like the chicken dinner.

Senator **Pressler**. Well, I am really not into the meals so much as cancelled flights because I happen to believe that the airlines going from the hubs to the smaller cities will frequently collapse flights together to make more money, even though it greatly inconveniences passengers who have no recourse or information about what is going on. I think there is a much higher percentage of lost baggage because there is less personnel, less attention paid to it. And not any way for those passengers to strike back or to be heard from again.

I think there are more overall delays from hub airports because of that.

And indeed, even in terms of the takeovers there are more mergers and takeovers of small airlines and changes and bankruptcies than there are of big ones. This has resulted in things such as people buying a ticket, as I once did, on a small airline and going to the counter, and it was completely empty, the sign was down, and everything, and they had gone out of business the day before, even though I had a ticket. So, that was a slight problem.

What about the business of takeovers?

Recently Northwest Airlines had a number of suitors. It was my strongest feeling that there was a public interest.

I am also a member of the Securities Committee. We had a hearing on not only Northwest Airlines but also the Chicago and Northwestern Railroad. Is there a public interest in the takeover of these railroads that would involve—airlines that would involve the public interest service? For instance, Northwest Airlines, South Dakota and North Dakota have a direct interest in what happens. Whoever buys that airline might decide to put their resources into completely another area.

Should the government be involved in approving such takeovers?

Mr. **Mead**. Well, from the standpoint of safety, I think most assuredly.

I think one of the precepts of deregulation was that the government would not certify an airline in terms of the quality of its service or its ability to meet its schedules.

I think it is a philosophical question you raised that depends upon your perspective.

My personal perspective is that the public interest would best be served by the government having some oversight of that.

Mr. **Noel**. Let me just add a couple of points here. There are some other policy levers available on these types of issues. As Ken mentioned, I think the foremost one everyone is concerned about is safety.

The second, of course, is that the Department of Transportation is responsible for conducting a fitness review to assure that the person taking over the airline is financially viable enough to maintain the airline in a good operating condition, and I think that is where some of the concerns about leveraged buyouts and so forth can be manifested and discussed.

And then, of course, there is the anticompetitive and antitrust aspects of it. In other words, if there is going to be some market change in service or some loss of competition, there is certainly plenty of opportunity for the government to intervene in that as well.

Senator **Pressler**. Okay. Now, I have requested a follow-up GAO study. I just want to lay out some of the things that I had in mind and ask you to how you see that.

As I see it, and indeed I think we should have a hearing here on the double disadvantaged passengers I call them. They are the passengers who are disadvantaged when they fly to the hub airport, they are disadvantaged twice again and more so, they are kind of a silent suffering majority of people traveling to small cities and towns when they travel from that hub airport on.

And we really need to take a look at their rates and their delays and their lost baggage and their takeover problems. That is the scope of the GAO report that is going to follow, is that correct?

Mr. **Mead**. Yes, and I am glad you amplified on your view of service because I think that offers us some useful guidelines that we can incorporate as we proceed.

Senator **Pressler**. I think you will find these small airlines that connect to these smaller towns and some of them are not smaller necessarily, but that they have more delays and more lost luggage. They are taken over and changed more and service is—but also it is just enormously expensive to fly. In fact, I am thinking of going before the Senate Rules Committee, Mr. Chairman, which you are also Chairman of that, I think, and maybe we can do it right here and say Senators from states like South Dakota should get a bigger reimbursement because we have to spend more on our travel than the Senators from California.

Senator **Ford**. Well, you always told me you were so frugal and innovative, you would not need that extra money, so that would be tough for you to get it.

Mr. **Mead**. You know, just as an aside, back when there was regulation, the long haul routes tended to subsidize the short haul routes. And in some respects we see a shifting of that today because the long haul routes tend to be the ones that are most heavily competed and are the ones that the consumer can get the best break on.

Senator **Pressler**. The captive traveler is now subsidizing the noncaptive traveler. My constituents are subsidizing the Los Angeles to New York passenger in some instances.

Senator **Ford**. Senator Exon.

Senator **Exon**. Mr. Chairman, thank you very much. I want to welcome you gentlemen. The GAO has done a very good job again. We expect nothing but that from you folks, and you have done a good job again. I congratulate you.

Let me ask you a few questions, some of which have been asked before, but I am going to try and pinpoint them a little bit more. First I will ask you, Mr. Mead, and your colleagues can comment on this if they like. I recognize that the study that you are presenting to us today is in a fairly limited area as far as overall concerns of what to do about them. Therefore, it cannot be addressed in the whole system. But for the experience that you have had and the experience you had in conducting the survey and I am sure the feelings that you and others had when we passed deregulation from your knowledge and in this study and elsewhere, do you feel that deregulation is working as it was intended by the Congress?

Mr. **Mead**. In part, yes, and in part, no.

Senator **Exon**. Give me a percentage on the parts.

Mr. **Mead**. In all candor, it seems to us that deregulation has clearly benefitted many people. There are more heavily competed routes today than there were before deregulation. Fares, in real terms, are down. Many more people use airplanes as a mode of transportation than they did before.

On the other hand, we think the results of our work today at these 15 airports present some warning signs. The whole idea behind deregulation was competition. We have shown you today 15 markets where that competition is much less than what probably many people had envisioned and, as a result, the benefits of deregulation are eroding for the people that live in these markets, and that is a cause for serious concern.

So, yes, certainly on the long haul routes the traveler has benefitted and continues to benefit. In the concentrated markets we have a problem, that may need adjustment.

Also, I might add one benefit in the concentrated markets, and I am sure you will hear this later, is increased service. There is no question that in the majority of the concentrated markets there are more trips to more places each day than there was before. Unfortunately, most of those are done by single carriers.

Senator EXON. They are done by what?

Mr. MEAD. On single carrier routes.

Senator EXON. All right, with regard to competition, is not the control of slots at the four slot controlled airports that we have contributing to a monopoly or a near monopoly at those airports?

Mr. NOEL. While we have not quantified the effect of slot controls on fares, I think there is ample evidence, both if you look at it intuitively as well as anecdotal evidence that has been presented to us, that slots do lead to higher fares. Quite simply, if you restrict the supply, prices will rise. In discussing our results with many of the airlines, they were very candid in saying that the cost to operate to a slot controlled airport is higher.

Further, there was some information in Aviation Daily the other day that TWA was using the value of its slots as collateral for some bonds that it was going to float. People have been willing to pay very high prices for slots. America West was willing to pay a very high price to get the slots in National and La Guardia. So clearly when you restrict supply, it will cost you more.

Senator EXON. I was thinking of America West when I asked the question. We are particularly delighted that at least on a temporary basis, America West has direct flights from Omaha to New York—La Guardia. I am speaking from a parochial standpoint now. That is just very important to us in that area. It is going to increase the travel, I am sure, to an airport like Omaha, Nebraska.

But it seems to me it would be a good idea, and would tend to present some competition on fares if, for example, at the four slotted airports today, we could make one or two slots available to literally any airline that wanted to come into New York or Washington or JFK or La Guardia. This could be done once a day, once every morning, and back in the evening, or some arrangement like that.

If you had such an arrangement, at least in the four slotted airports, I would think that it would help set competitive fares much better than the system that we have now.

Is that an unreasonable idea that I am trying to address?

Mr. MEAD. No, I do not think it is unreasonable. And it probably ought to be considered, along with the fact that we need ground space for the gates.

Senator EXON. When I am talking about slots, I am talking about—there is no use landing if you cannot unload. When I talk about slot, I mean availability of landing and discharging and picking up and taking off.

I recognize that your study did not concentrate on flight delays and lost luggage and treatment of customers and so forth but did you pick up any information at the concentrated airports that you studied on whether there are increasing problems in these customer service areas? Can you comment on that based upon your present knowledge?

Mr. **Mulvey**. We visited all of the 15 concentrated airports. A GAO team went out and interviewed airport officials at each of the airports. And we asked them about what kind of complaints that they were receiving, whether there was any increase of complaints over the last few years, whether they had information about higher fares, or complaints about higher fares. And we did not hear anything along those lines.

So while we did not look at that empirically, at least we did not get any anecdotal evidence to support that.

Senator **Exon**. My last question, Mr. Chairman, has to do with what we are going to hear, I believe, from the next witnesses at the table. And the airlines are going to testify to the fact that they too have commissioned a study. And I quote from what they are prepared to say: "The assumed linkage between the increased concentration, decreased competition and higher prices, does not exist. There is very little, if any, significant relationship between average fares and airlines concentration at either hub or non-hub airports."

Do you agree?

Mr. **Mead**. No, we do not, and I want Frank to amplify on this. But, as we understand the conclusion the ATA reaches, it is that the higher fares simply coincidentally occur at these highly concentrated airports. We do not share that view.

On the other hand, the data in the ATA study do show the higher fares occurring at these concentrated airports.

Frank, would you amplify.

Mr. **Mulvey**. Underlying the ATA's analysis is what they call a step-wise multiple regression model, which tries to look at whether or not there is a relationship between a variable like concentration and higher fares.

They put together their model and they concluded that they do not see a significant relationship between the concentration and higher fares. But what they do is they put into their model two other variables which are related to concentration. When you include those variables, you get what is called multi-collinearity. The variables are not independent of each other, so you cannot put any confidence in your results.

So when they say they find no correlation, well, of course they find no correlation, because they have got too many variables in there which are all trying to explain the same thing.

And these variables they put in, they call them service variables, but, in fact, they are variables that are very related to hub concentration.

So, although we have only had overnight to look at this, we have found some serious methodological flaws in their analysis and I would think that we would be willing to give you more detailed information on that for the record.

Senator **Exon**. I would say, Mr. Mulvey, that what you are telling us then, that sometimes we get involved in the battle of statistics, and the interpretation of those statistics, when we try and make decisions here, is that correct?

Mr. **Mulvey**. Yes, sir.

Senator **Exon**. Thank you, Mr. Chairman. And thank you, gentlemen.

Senator **Danforth**. Mr. Chairman.

Senator **Ford**. Yes.

Senator **Danforth**. I would like to take Mr. Mulvey up on that suggestion. And I would hope that the GAO would furnish us for the record their comments on the ATA study, and also their comments on the testimony by ATA.

Mr. **Mead**. We will do that.

Senator **Danforth**. And might I say that ATA also should be welcomed to do exactly the same thing with respect to the GAO study.

Senator **Ford**. What is good for the goose is good for the gander.

Mr. **Mead**. One added point on the ATA analysis. You may hear this afternoon that one reason for the higher fares out of these concentrated hubs is service. This was a fairly novel suggestion to us that higher service at hubs would result in higher fares, because the basis precept for a hub was that the enormous operating efficiencies and economies of scale would benefit the airline as well as the passengers. So that was something that came to us as a fairly strange conclusion.

Mr. **Noel**. Let me add just one other thing too in commenting on the ATA study. One of the things they said that they thought affected fares was the presence of a low-cost, low-fare carrier. And this is the basic chart—and I am sorry it is not as large as ours—out of their study. Up above this line, which shows the industry average, are basically all the concentrated airports that we looked at. Below the line are airports like Las Vegas, Midway, Phoenix, and so forth, where a low-cost carrier operates.

Now, it seems to me that if we are talking about competition and we are saying that the presence of a low-cost, aggressive-pricing carrier makes a difference in fares, that is really kind of all the evidence that you need.

Senator **Danforth**. Thank you.

Senator **Ford**. Senator McCain will have some questions for you, Mr. Mead, and your companions. And he asks that you respond to those in a timely fashion. And there may be some other questions in writing, too, and we hope you will do that.

Let me compliment you on your study and your testimony here today on a very complicated matter; I think you have done very well. And so we appreciate that and look forward to visiting with you from time to time in the future.

Mr. **Mead**. Thank you, Mr. Chairman and members of the subcommittee.

Senator **Ford**. The next witness will be Robert J. Aaronson, president, Air Transport Association of America.

Mr. Aaronson, you may proceed, and would you acknowledge those who are assisting you in your testimony.

STATEMENT OF ROBERT J. AARONSON, PRESIDENT, AIR TRANSPORT ASSOCIATION OF AMERICA

Mr. **Aaronson**. I will, Mr. Chairman. Thank you very much to you and the members of this committee.

The Air Transport Association of America very much welcomes this opportunity to discuss with the Subcommittee on Aviation the benefits that airline hub operations have conferred on the American traveling public.

With me is Mr. Ed Smick, director of Simat, Hellieson & Eichner, which prepared the study for us. And he will be assisting me as we proceed.

Although airline hubs existed prior to the 1978 deregulation act, they have become a far more prominent characteristic of airline routing operations during the last decade.

As my statement and written submissions indicate, hub operations provide an expanding array of benefits to air travelers. The evidence shows that travelers today are far better off than in 1978.

Last year, when ATA testified about airline hub operations before this subcommittee, we emphasized the benefits that hubs provide to the traveling public. Since then, in light of public debate and discussion about hub operations, ATA commissioned Simat, Hellieson & Eichner, a leading economic research organization, to conduct an empirical study of airline hub operations.

This study, the most comprehensive of its kind, confirms our earlier views, and sheds new light on hub operations as they relate to fares, competition and levels of service. We have provided a copy of that study to you.

Simply stated, the study evaluates the numerous factors that impact airline industry operations and pricing at both hub and other large airports.

As I mentioned, Mr. Smick will be prepared to respond to any questions that you may have about the results of the study or the methodology used to undertake it.

The SH&E study examines the period from 1980 to 1988, the most recent period for which complete data was available. It may be appropriate, in a year or so, to augment and update the study to obtain a clearer picture of the effect of subsequent and more recent trends.

I would like to begin by describing some of the characteristics of hub operations in summary. A hub provides a location at which an airline collects passengers from its arriving flights originating at a variety of locations, and transfers those passengers to its departing flights, which are destined for a variety of locations.

In all cases, the share of local passengers carried by the hubbing carrier is considerably less than its share of connecting and local passengers together.

For example, during the third quarter of 1988, TWA's share of total enplaned passengers at St. Louis was 82 percent, but its share of local passengers was 62 percent, or a 20-percent difference.

We should note two significant benefits that are derived from hub operations. First, cities located at the end of a hub's spoke enjoy more frequent and conveniently scheduled service to more destinations than would have been possible with standard linear routes used by airlines during the era of regulation.

Secondly, service into or out of the hub city itself is many times greater, in terms of destination and frequency than the service that city would normally generate based on its own population.

From an airline's point of view, a hub operation makes more productive use of its resources, especially its aircraft, than linear routings.

For example, with 10 aircraft, an airline can provide non-stop service to 10 city pairs. By sending those same 10 aircraft through a hub, the airline can efficiently and expeditiously serve 91 city pairs.

Of course, this means that airlines can operate more economically, one of the principal goals of airline deregulation.

As you can see from this chart, the airline fares paid by passengers in 1988 were lower, without any adjustments for inflation, than they were in 1981. During that same seven-year period, consumer prices rose 30 percent. How many other industries can point to this kind of performance?

Hub and spoke routes have contributed to the development of a more integrated national air transportation system. Unfettered from the limitations of regulation, airlines now use their hubs to add substantially to an impressive pattern of domestic service.

By way of illustration, a passenger traveling from Hartford, Connecticut, a typical, medium-size city, to Los Angeles, can depart Hartford at a multitude of times between 6:00 a.m. and 7:45 p.m. He or she can select from eight different airlines, which operate over 10 hubs to provide this transportation.

And moreover, that passenger can not only travel from Hartford to Los Angeles International Airport, but if it is more convenient, to Burbank Airport, Long Beach Airport, Ontario International Airport, and Orange County Airport.

I have used these illustrations to give you a sense of the overall gain the American traveling public has received from airline hub operations.

But generalizations and incidental anecdotes do not convey a complete picture. That can only be obtained through a detailed, market-by-market analysis.

SH&E analyzed industry-wide data and substantial amounts of individual city pair market data taken from the Department of Transportation's Origin and Destination Survey of airline passenger traffic for the third quarters of 1980, 1984 and 1988. 17 mileage blocks were constructed from the survey data to analyze fares; 60 airports were examined; 30 hub airports and 30 large, non-hub airports.

The study depicts greatly improved benefits for airline passengers during the 1980 to 1988 period. The overall picture that emerges is one of an airline hub and spoke operating system that does an excellent job of serving the needs of the traveling public.

After extensive analysis, SH&E determined that there is little statistical support for the popular misconception that a correlation exists between concentration, competition and higher prices at either hub or non-hub airports.

The study concluded that average fares at hub airports were approximately equal to system-wide average fare levels in both 1980 and 1984.

In 1988 hub fares were only 1.5 percent above the industry average.

By the way, when I use the term fares from here on, I mean prices people are actually paying—reality, and not any of the multitude of fares that theoretically could be paid.

So, the data that we are presenting is very similar to GAO's in that we are both using yield as the criteria.

The study concludes, further, that fares at hub airports, as a group, have been decreasing when compared with industry-average fares. Almost two-thirds of all hubs examined showed average fare declines over the last four-year period covered by the study. Compared to non-hub airports, almost three times as many hub airports showed fare declines of 10 percent or more over the same period.

Significantly, SH&E found that consolidation of a carrier's operations at a hub airport produces substantial benefits for local travelers. Those benefits include access to a greater number of destinations, greater frequency of flights, and more non-stop service.

SH&E highlights the significant, but often overlooked fact that there is a substantial competition in individual city pairs.

Although the hubbing airline will board most of the total passengers at the hub, it does not necessarily carry most of the passengers traveling on any particular spoke that emanates from the hub.

The total number of passengers boarded by the hubbing airline, therefore, is not the appropriate measure of competition. Instead, it is the level of competitive service offered in each individual city pair market that should command our attention.

For example, an airline that operates a hub at the other end of a spoke is usually in vigorous competition for passengers traveling in that city pair. That, and not an airline's number of gates at a hub, for example, is what affects the passenger who wants to fly from point A to point B.

This reality and the consequent need to analyze competition on a city pair basis, rather than being content with merely reciting the gross characteristics of the hub, are consistently ignored in discussions about hub concentration.

In fact, SH&E, looking at over 100,000 city pairs, found that most passengers are traveling in hub markets that are highly competitive.

For example, almost four-fifths of all hub passengers traveling in markets where non-stop service is available will have a choice of carriers. Passengers who are willing to forego this premium service can save substantial amounts of money when traveling from almost any hub by selecting lower-priced connecting, or multi-stop service.

As a general rule, regardless of the type of service selected, the price of that service has declined since 1981, according to SH&E. Expressed in constant dollars, the average domestic airline price declined 27 percent during the 1981 to 1988 period.

The results of the SH&E examination refute the criticism that prices at hubs have reached unreasonable levels. On the contrary, they are comparable to non-hub prices.

Obviously, some of the sampled airports had fare averages higher, and some lower, than the system-wide average. However, the trend of the changes in the average fare index at the hub airports during the period of this study is very encouraging to consumers.

The SH&E study analyzed air fares at both hub and non-hub airports to determine which factors explained price variations from city to city. The most striking finding of this analysis is that concentration, as measured by the most widely used index of concentration, provides little explanation for the fare levels at a hub.

Instead, the study found that fares in hub markets will be higher when the quantity and quality of service provided in that market are more substantial than local demand by itself would warrant. The higher levels of service, especially more frequent service and more non-stop flights that are provided in hub markets, often command a higher price.

This should not be surprising elsewhere in the economy enhance services, command higher prices. This also explains why, as reflected in section 5 of the study, certain hubs have higher fares than the industry average.

The analysis performed in the study indicates that the high level of service at certain hubs can account for fare levels that are 20 percent or more higher than the industry average. This pattern is attributable to a previously discussed phenomenon that occurs in both hub and non-hub markets where there is high quality nonstop or single plane service in a city pair market, fares in that market will tend to be higher than the average industry fare.

But the hub city passenger is not hostage to these higher prices. There are other options. Most local hub passengers can obtain other frequently lower priced air service, either connecting or multi-stop to or from the hub.

For example, a traveler in the Atlanta-San Francisco market can select from 18 connecting routings in addition to the six direct flights that serve the market.

The average origin or destination passenger at a hub, thus, is not a captive. The fact that only a modest share of such passengers use alternative lower priced service underscores the willingness of most travelers to pay for a superior, more convenient service.

Finally, the study sampled airline schedules at 25 typical spoke airports and determined that on average these airports are now served by almost twice as many airlines as in 1978.

In addition, those cities now enjoy service to or from over twice as many destinations as in 1978. The number of competitive destinations has increased sixfold. These results clearly indicate that hub airlines are not exercising a stranglehold on spoke communities.

Competition at spoke cities has risen substantially since deregulation. A growth in the number of hubs and the expansion of service at them have had astonishingly beneficial consequences for the typical spoke community. So, competition is increasing throughout the system.

These two pie charts illustrate the relative levels of competition measured on a market-by-market basis in 1978 and 1988. In 1978 while still operating in a regulated environment, nearly half of all passengers traveled in markets where a single carrier held 70 to 100 percent of the market share.

By 1988, as a consequent of the hub and spoke routing patterns that emerged under deregulation, only 20 percent of our passengers traveled in a market where one carrier holds a 70 percent or greater share of the market.

And looking at the remaining distribution, 42.8 percent of our passengers traveled in markets where the hubbing airline has 30 to 60 percent of the market share and more than a third, 37 percent, travel in markets where the so-called dominant airline has less than 29 percent of the market.

Another indication that air carriers are fiercely competitive is that profit margins for the airline industry are anemic. They are well below the average profit margins of U.S. industry. The airline industry in 1988 ranked 68th among the 71 industries that our study examined in terms of profitability as a percentage of sales. And 1988 was one of our better years.

The lackluster profit margins of the airline industry have persisted even during a time in our history when because of traffic increases, aircraft fleet maturation, the desire to acquire more efficient equipment and noise concerns, U.S. airlines have embarked upon an ambitious airline acquisition program.

As of the end of April of this year, U.S. scheduled airlines had firm orders for 940 aircraft valued at $53.1 billion, and options for 1,158 additional aircraft valued at $42.6 billion.

Airlines need the wherewithal to finance these purchases. If they do not obtain that financing, the demands of the traveling public will be unmet in the 1990s.

In summary, the SH&E study tells us the following. The hub and spoke system increases productivity and is a major reason why average airline fares declined between 1981 and 1988 and remained far below the CPI.

Individual city pair competition increased between 1981 and 1988 resulting in comparable average fares at hub and large non-hub airports. Even hubs with fares above the average are coming into line with system-wide averages.

In all cases the share of local passengers carried by the hubbing carrier is considerably less than its share of the total number of connecting and local passengers who use the hub airport.

Quantity and quality of service are the major factors that influence fares, not characteristics such as a hub carrier's share of the airport's total boarding passengers or gates.

Both hub and spoke cities have received significantly increased service since 1978.

I am sure the committee is interested in how we would account for the different conclusions reached in the GAO and SH&E studies.

It should be understood that they have been undertaken independently of one another, and as Mr. Mead said earlier, examined hub operations in two different contexts.

I would like to ask Ed Smick to explain some of the differences in the studies. Ed?

Mr. SMICK. I would be happy to.

Senator FORD. Let us expedite it if we can.

Mr. SMICK. I will be very expedited, sir.

Senator FORD. We are getting confused more and more all the time, so try and straighten us out, Mr. Smick.

Mr. **Smick**. I will try. The GAO study methodology is simple, which is of benefit to the reader. However, the GAO study skews the results by the use of its airport selection criteria and its study methodology.

Airports which contradict the GAO's conclusions were not analyzed. The use of their averages without relating them to averages for mileage blocks can produce highly misleading conclusions.

I can tell you that at a given airport a different mix of trip lengths could easily produce a 27 percent variance in average yields.

Emplanements are an irrelevant measure of competition. At Raleigh-Durham, for example, the leading carrier emplanes 68 percent of the passengers at Raleigh-Durham, including transit passengers, but its share of local traffic only 39 percent.

The GAO analyzes only one factor, concentration, as the determinant of fares. Why, for example, is not service relevant? The GAO study acknowledges that single plane service is an important factor, but ignores it in its conclusions.

What is the effect of these shortcomings? If a second hubbing carrier came into St. Louis tomorrow and it took half of TWA's emplaned passengers, St. Louis would still be concentrated under the GAO's criteria.

As another example the GAO acknowledges that American's operations at Raleigh-Durham were much shorter haul in nature after it began hub operations, thereby raising yields. Equally important but ignored is the higher quality of service provided to American's destinations, nonstop replacing connecting service. We believe that because of the shortcomings just cited, the conclusion that concentration leads to higher fares is inaccurate and misleading and that the conclusion that the establishment of a "dominant position 'will cause yields to increase is also inaccurate and misleading.

Mr. **Aaronson**. Mr. Chairman and members of the committee, airline hub operations have been subjected to unreasonable criticism. That criticism is perhaps attributable to cursory examinations of the hub phenomenon. Detailed market-by-market analysis which our study relied upon, reveals a system that is—has provided and continues to provide extraordinary benefits to the consumer.

Thank you for hearing our presentation. Ed and I will be very happy to try to answer your questions.

[The statement follows:]

STATEMENT OF
ROBERT J. AARONSON
PRESIDENT OF THE
AIR TRANSPORT ASSOCIATION OF AMERICA
CONCERNING AIRLINE HUB OPERATIONS
BEFORE THE SUBCOMMITTEE ON AVIATION
COMMITTEE ON COMMERCE, SCIENCE AND TRANSPORTATION
UNITED STATES SENATE
JUNE 7, 1989

The Air Transport Association of America welcomes this opportunity to discuss with the Subcommittee on Aviation the benefits that airline hub operations have conferred upon the American travelling public. ATA has 21 U.S. members and two Canadian associate members. Our members collectively operate over 97 percent of the revenue passenger miles that scheduled air carriers fly in this country.

Although airline hubs existed before Congress decided in 1978 to remove the authority of the Civil Aeronautics Board to regulate the domestic rates and routes of airlines, they have become a far more prominent characteristic of airline operations during the last decade. The emergence of the hub as a prominent phenomenon in our industry has provided an ever-expanding array of benefits to air travelers. The evidence clearly reveals that the typical traveler in the typical hub city pair in this Nation is far better off today than he or she was at the outset of deregulation, whether competition, fares or service is used as the measurement of the traveler's well-being. Specifically:

- Expressed in constant dollars, the average airline price paid declined 26 percent between 1981 and 1988.

- Average fares paid at hub airports were approximately equal to the industry average fares in 1980 and 1984, and in 1988 they were but 1.5 percent above the industry average.

- Both hub and large non-hub airports became significantly more competitive during the 1981-88 period.

- Hub airports, on average, have nonstop service to twice as many destinations as non-hubs of comparable size.

- Spoke cities had single-carrier service in 1988 in twice as many city pairs as they did in 1978.

ATA testified before the Subcommittee last year about airline hub operations. We emphasized in that testimony the benefits that hubs provide to the travelling public. Our confidence in that view has been fortified by the results of the empirical study of the characteristics of hub operations that Simat, Helliesen & Eichner, Inc. has conducted for us. We have provided a copy of it to you. Mr. Smick of the Simat firm is with me today to respond to any questions that you may have about the results of the study or the methodology used to undertake it.

Some general observations about hub operations will place in perspective the results of our study.

OVERVIEW

The function of a hub is to provide a location at which periodically throughout the day an airline collects traffic from its arriving flights, which originate at a variety of locations, and transfers that traffic to its departing flights, which are destined for a variety of locations. A passenger originating at the end of one of the hub's spokes, which often is a city of small-to-medium size, is offered more frequent and conveniently scheduled service to a great many more destinations than was afforded by the predominantly linear route operations of the airline industry during the era of Civil Aeronautics Board regulation. An often unnoticed but very significant byproduct of hub operations is the availability to the local passenger, i.e., the individual who originates at or is destined to the city in which the hub is located, of a far higher level of service, both in terms of choice of destinations and frequencies, than the city would generate on its own.

From an airline's point of view, a hub operation enables it to far more productively use its resources, especially its aircraft, than when operating unrelated linear routings. An airline can serve many more cities by operating its aircraft through a hub. For example, if an airline has ten aircraft available at a given time, it can provide nonstop service to ten city pairs. If, however, it sends those same ten aircraft through a hub, they can efficiently and expeditiously serve 91 city pairs. This enhanced productivity enables an airline to operate more economically, which was one of the principal goals of airline deregulation. More economic operations have resulted in airline fares that in 1988 were lower, both adjusted for inflation and unadjusted for it, than they were in 1981.

Airlines have capitalized since the beginning of this decade on the opportunity to develop hubs as a means to rationalize their route systems and provide expanded patterns of service to both passengers and shippers. Hub-and-spoke routes have contributed to the development of a national air transportation system that is far more integrated than that which existed before deregulation. Nostalgia about pre-deregulation air service should not be permitted to obscure the fact that during that era the Civil Aeronautics Board determined what routes an airline could operate and often imposed significant limitations on that route authority. Moreover, the route authority that an airline possessed represented the accretions of decades of ad hoc regulatory decisions rather than a current, comprehensive assessment of the needs of the travelling and shipping public.

Unfettered by deregulation from those limitations, airlines have employed their hubs to add substantially to an impressive pattern of domestic service. By way of illustration, a passenger who wants to travel from Hartford, Connecticut, which is a typical medium-size city, to Los Angeles can depart Hartford at a multitude of times between 6:00 a.m. and 7:45 p.m. He or she can select from eight different airlines, which operate over ten hubs, to provide the transportation. Moreover, that passenger can not only travel from Hartford to Los Angeles International Airport, but also to Burbank Airport, Long Beach Airport, Ontario International Airport, and John Wayne Airport in Orange County. This plethora of air travel opportunities for the Hartford passenger would not be available without the hub-and-spoke route systems of the airlines that serve that city.

Hub systems create intense incentives among carriers to attract passengers to their services. Fares in city pairs that involve routings over hubs are highly competitive because passengers in so many of those city pairs can select from alternative routings on different carriers to reach their destinations. The increasing inter-hub competition during this decade, which is a reflection of the growth in the number of domestic hubs to 30, is a major factor in the air travel savings that consumers have realized since deregulation.

Equally significant, but repeatedly overlooked, is the fact that there is typically substantial competition in individual origin-and-destination hub city pairs. Although in overall terms the hubbing airline will be the leading enplaner of passengers at the hub, it will not necessarily enjoy that status in any particular spoke that emanates from the hub.

The total number of enplanements of the leading airline at the hub therefore is not the appropriate measure of competition at the airport. Instead, it is the level of the competitive activity in the individual city pairs that should command our attention. For example, an airline that operates a hub at the other end of the spoke often will offer vigorous competition in that city pair. That, and not the leading airline's overall position at the hub, is what affects the passenger who wants to fly from Point A to Point B. This reality and the consequent need to analyze competition on a city-pair basis, rather than being content with merely reciting the gross characteristics of the hub, are consistently ignored in discussions about hub operations.

As you are aware, the Brookings Institution has concluded that deregulation has meant an annual savings for consumers of $5.7-billion, as measured in 1977 dollars. S. Morrison & C. Winston, The Economic Effects of Airline Deregulation (1986). Expressed in 1989 dollars, those savings exceed $10-billion. Brookings has estimated that one-third of those savings is attributable to lower fares. Quite significantly, however, it has estimated that two-thirds of the savings are attributable to service improvements, most notably increases in flight frequencies. We cite the Brookings analysis for two reasons. First, the transformation of the domestic operations of U.S. carriers that deregulation has brought about has produced enormous benefits for consumers. Chief among those benefits is the development of air transportation into a service that is readily available to the average American. Second, although lower fares are the most often noted products of deregulation, service improvements -- i.e., increased flight frequencies and destinations -- have also created substantial benefits for consumers.

The study that Simat, Helliesen, & Eichner conducted for us fleshes out these general observations. The results of that study depict greatly improved benefits for the travelling public during the 1980-88 period. The extent of those improvements varies from route to route. This is precisely the situation that should be anticipated in a transportation system that serves diverse needs and which is not shackled by the procrustean uniformity that so frequently characterizes government economic regulatory actions. The overall picture that emerges is that hubs do an excellent job of serving the needs of travelers, whether they originate or are destined for a hub, or connect at it.

METHODOLOGY OF THE STUDY

The methodology that the Simat firm used to conduct the study is described in Section 3 of the document. In summary, the study relies upon industry-wide data and substantial amounts of individual city-pair data. Data Bank IA of the Department of Transportation's Origin and Destination Survey of Airline Passenger Traffic was the source of much of the data used in the study. Data from the Survey for the third quarters of 1980, 1984 and 1988 were analyzed. Those three periods were selected because 1980 was the first year that useful data that included former intrastate airlines were available, 1984 represented the mid-point between 1980 and 1988 and preceded several important airline mergers, and 1988 was the last year for which data were available. Of course, the study could be updated when newer data become available.

Seventeen mileage blocks were constructed from the Survey data to analyze fares. Sixty airports were examined for fare-analysis purposes: 30 hub airports and 30 large non-hub airports. Attachment A lists those airports.

FINDINGS

Fares

Although average airline prices, expressed in terms of yield, for domestic operations significantly increased in the 1978-81 period because of sharply rising jet fuel prices, since

1981 airline prices have declined. The average yield in 1988, unadjusted for inflation, was 3.8 percent below the average 1981 yield. Few industries can match that performance. For instance, that decline is in marked contrast to the performance of the lodging industry during that period. Between 1981 and 1988, the average room rental rates for hotel, motor hotel, and economy hotel categories of lodgings increased 49, 23, and 100 percent, respectively. Expressed in constant dollars, the average airline price declined 26 percent during the 1981-88 period. Attachment B summarizes these airline industry data. Reductions in jet fuel prices accounted for 15 percentage points of that decline but the remainder of the decline was attributable to improvements in airline industry efficiency. This decline in prices reveals the industry's consistent pattern during this decade of passing savings on to the customer.

Our study examined the price levels at the 60 sampled airports to determine whether prices for services at hub airports were substantially different than those at non-hub airports. To do so, an average fare index was constructed by taking the actual average fare paid in the city pair being analyzed and dividing it by the industry average fare for the corresponding market-distance category. The results of that examination belie the criticism that prices at hubs have reached unreasonable levels. On the contrary, they are comparable to non-hub prices. Our study reveals that average fares at hub airports were approximately equal to the industry average fare levels in 1980 and 1984, and in 1988 they were but 1.5 percent above the industry average. For the three sample periods used in our study, average fares at hub airports exceeded those at large non-hub airports by only 2.2 to 3.8 percentage points. (Attachment C.)

As would be expected in any large sample, the outer range of variations between individual airports in both the hub and non-hub categories considerably exceeded the average. Attachment D lists those airports and indicates that the average fare index for hub airports varied from a high of 1.275 at Cincinnati to a low of .660 at Dallas Love Field. The spread at non-hub airports ranged from 1.077 at John Wayne Airport in Orange County to .778 at Albuquerque. (1.0 represents the average for each category of airport.)

The trend of the changes in the average fare index at the hub airports during the period of our study is very encouraging for the consumer. Almost two thirds of the hub airports experienced declines in their average price index between the third quarter of 1984 and the third quarter of 1988. Five of the hub airports that had above average prices in 1988 nevertheless showed substantial reductions in prices during the 1984-88 period:

Average Fare Index
(Industry Average = 100%)

Airport	3rd Qtr. 1984	3rd Qtr. 1988	Percent Change
Cincinnati	136.53%	127.53%	(6.6)%
Atlanta	138.21	122.56	(11.3)
Memphis	138.07	121.83	(11.8)
Dayton	130.07	120.2[illegible]	(7.5)
Charlotte	137.13	120.07	(12.4)

Moreover, the average fare indices of four of the six airports at which hubs were established after the third quarter of 1984 showed significant declines:

Average Fare Index
(Industry Average = 100%)

Airport	3rd Qtr. 1984	3rd Qtr. 1988	Percent Change
Nashville	131.95%	103.49%	(21.5)%
Cleveland	127.38	103.31	(18.9)
Raleigh-Durham	116.97	121.15	3.6
Cincinnati	136.53	127.53	(6.6)
Washington (IAD)	106.45	109.74	3.1
Milwaukee	132.37	99.66	(24.7)

This pattern of declining average fares at these hubs suggests that as new hubs mature, fare levels at them can be expected to become much more akin to the industry average.

In view of the assumption among some critics of hub operations that the elimination of a carrier at a two-carrier hub leads to monopoly pricing practices, an especially noteworthy fact is that at the two airports at which mergers reduced a two-carrier hub to a one-carrier hub no significant increase in average fare levels occurred:

Average Fare Index
(Industry Average = 100%)

Airport	3rd Qtr. 1984	3rd Qtr. 1988	Percent Change
St. Louis	118.90%	103.77%	(21.7)%
Minneapolis	107.02	109.89	2.7

The hub airports which experienced the greatest increases in average price indices between the third quarter of 1984 and the same quarter of 1988 were those that had the hub operations of two low-cost airlines which placed particular marketing emphasis on low fares in 1984:

Average Fare Index
(Industry Average = 100%)

Airport	3rd Qtr. 1984	3rd Qtr. 1988	Percent Change
Newark	72.70%	104.56%	43.8%
Houston (Hobby)	65.85	91.49	38.9
Houston (IAH)	88.97	118.90	33.6
Denver	86.57	106.87	23.4

Unlike the hub airports, at approximately half of the large non-hub airports (17 of 30) the average fare indices increased during the same period. (Attachment E.) The number of hub airports that had average fare index declines of ten percent or more between 1984 and 1988 was 11 but only four large non-hub airports had comparable declines. This represents a nearly three-to-one margin of superiority for hub airport fare performance.

Our study also compared the differences in average fares by distance between hub and large non-hub airports. Seventeen mileage blocks were used to develop these comparisons. Average fares at hub airports were between two and six percentage points higher at distances from 250 to 1,350 miles than the industry average fares. Large non-hub airports had average fares below the industry average in the 351-450 mile block, but they thereafter increased at greater distances. Beyond 1,350 miles, the average fare for hubs was near or below the industry average and the large non-hub average exceeded the industry average, except in the beyond 3,250 mile block. (Attachment F.) These results indicate that there is a modest tendency of hub fares to exceed non-hub fares in short and medium-haul markets. As discussed more fully below, hub markets typically offer considerably higher levels of service than non-hub markets, which we believe in large measure explains this tendency. Finally, when the average fare index for hub airports is plotted by distance in 1980, 1984, and 1988, as is done in Attachment G, it becomes apparent that fares at hub airports more closely approximated overall industry fare levels in 1988 than in 1980 or 1984.

Competition

Both hub and large non-hub airports have become more competitive during the 1980-1988 period. The study used as the measure of competitiveness the proportion of the traffic that the leading airline held in each city pair at each of the 30 hub and 30 large non-hub airports. That measurement reveals a pronounced reduction in the proportion of traffic in hub city pairs that are in the highest city-pair concentration category and a comparable increase in the proportion of traffic in hub city pairs that are in the lowest city-pair concentration category. The most competitive city-pair category, in which the share of the leading airline is only in the 0 to 29 percent range, comprised 23.6 percent of hub city pair traffic in the third quarter of 1988. In the third quarter of 1980 that category accounted for merely 16 percent of hub city pair traffic. Mirroring that trend was the decrease during the same period in the proportion of hub city pairs in the city-pair category in which the leading airline carried the highest proportion of traffic. In the third quarter of 1980, 23.5 percent of the hub airport traffic was in the category of airports where the leading airline had a 90 to 100 percent share of the traffic. The proportion of hub airport traffic in that category decreased to 17.2 percent in the third quarter of 1988. (Attachment H.)

Large non-hub airports evidenced a distribution of the leading airline shares that indicates somewhat less concentration than at the hub airports. The percentage of traffic in 1988 in the most competitive city-pair category of non-hub airports was 5.5 percentage points greater than the same category for hub airports. The same difference between the two classes of airports occurred in the city-pair category in which the leading airline carried the highest proportion of traffic.

Our study analyzed the factors that influenced air fares at the 60 airports. The relationship between air fares, as represented by the average fare index, and a number of independent variables was evaluated. Those variables included measures related to competition and the proportion of traffic carried by the leading airline; service levels; load factors; business versus pleasure travel; and low-cost airline services.

The most striking finding of this analysis was that concentration, as measured by the Herfindahl-Hirschman Index for the hub airport, provides very little explanation for the fare levels at the hub. Users of the HHI methodology typically rely upon total airline enplanement shares at a hub rather than shares in individual local city pairs. It is routinely used to measure the competitive effects of proposed mergers, both in the airline industry and in other industries. Our study developed an alternative measure, one that was based upon local city-pair shares, to provide another variable in analyzing hub characteristics. The factors that most influence fare levels were found to be the level of service, degree of competition, business/pleasure traffic mix and the presence of low-cost airlines. This finding underscores a crucial conclusion to be drawn from our study: analysis of hub behavior cannot be limited to an examination of a single characteristic of hubs. More incisive, and energetic, analysis than that is required.

Our study found that fares in the local city pairs of a hub will be higher when the quantity, quality and value of service (in terms of net capacity) available in them are substantial when compared to local demand. As discussed below, such relatively higher levels of service are typical of hub operations. A diminution in the city-pair share of the leading airline in a given market, which is what typically occurred at hub airports between 1980 and 1988, will result in a reduction in the average fare. Moreover, average fares will tend to be higher at predominantly traffic generating airports, such as Hartford, and lower at predominantly destination airports, such as Orlando and Las Vegas.

Service

Passengers in hub origin-and-destination city pairs generally enjoy the freedom to select from competing providers of air service. As Attachment I indicates, only 18.8 percent of the total origin-and-destination traffic that hub cities generate is in city pairs that have only one airline providing nonstop service. Two-thirds of that category of traffic is in city pairs with two or more airlines providing nonstop service. The remaining 14 percent of the traffic is in city pairs where no nonstop service is provided and which presumably receive highly competitive multi-stop or connecting service. Consequently, over 80 percent of the origin-and-destination traffic at hub cities involves highly competitive city pairs, with carriers offering comparable service. Only 20 percent of that traffic moved in markets where a carrier had a service advantage, and passengers in these markets typically had connecting options over competing hubs.

Hub airports on average have nonstop service to many more destinations than do non-hub airports. Furthermore, hub airports have experienced significant increases since deregulation in the number of nonstop city pairs that they serve. Attachment J indicates that 98 percent (339 of 345) of the net new nonstop city pairs served at 60 selected cities since 1979 involved hub airport cities. Hub airport cities have nonstop service to an average of 70 destinations. Non-hub cities of comparable size on average have nonstop service to half, or fewer, the number of destinations. Moreover, between 1979 and 1989 hub cities averaged an improvement in the portion of total traffic carried in nonstop city pairs of over seven percentage points but non-hub cities averaged only a two percentage point improvement in that category of traffic. Six of the newest hubs -- Charlotte, Cincinnati, Dayton, Memphis, Raleigh-Durham, and Salt Lake City -- showed nonstop city-pair improvements during that period far in excess of the average hub improvement:

Percent of Traffic in Markets With Nonstop Service

	1979	1988	Change
Cincinnati	68.7%	82.1%	13.4 pts
Memphis	74.2	79.6	5.4
Salt Lake City	74.8	80.2	5.3
Raleigh-Durham	50.7	71.6	20.9
Dayton	44.2	64.6	20.4
Charlotte	44.5	83.5	39.0
Average	59.5%	76.9%	17.4 pts

The much higher levels of service provided in hub city pairs often command a higher price. This should not be surprising; elsewhere in the economy enhanced services generally earn premium prices. What needs to be noted, however, is the ability of most local hub passengers to obtain other, frequently lower-priced air service, either connecting or multi-stop, to or from the hub. For example, a traveler in the Atlanta-San Francisco market can select from 18 connecting routings in addition to the six direct (nonstop or multi-stop) flights that serve that city pair. The average origin or destination passenger at a hub thus is not a captive. The fact that only a modest share of such passengers use alternative, lower-priced service underscores the willingness of the average traveler to pay for a superior, particularly a more convenient, service.

The analysis performed in our study indicates that the high level of service at hubs can account for fare levels that are 20 percent or more higher than the industry average. This pattern is attributable to a previously discussed phenomenon that occurs in both hub and non-hub city pairs: where there is high-quality nonstop or single-plane service in a city pair, fares in that city pair will tend to be higher than the average industry fare. In examining the top 50 origin-and-destination city pairs of five representative cities -- three of which were non-hubs (Boston, Indianapolis and Los Angeles) and two of which were hubs (Charlotte and Cincinnati) -- our study determined that in most of those city pairs the single-plane service average fare was higher than the connecting service fare. Depending upon the city, the average of this difference ranged from 14 to 24 percent. (Attachment K.) The range of the difference appears to be unrelated to whether the city was a hub or a non-hub. Nevertheless, the category of the city will ultimately be significant in one respect. At hub airports there are considerably more city pairs in which airlines offer higher quality, higher cost service. These more numerous premium fares produce for the hub airport a higher average fare level.

Since deregulation passengers have increasingly been able to conduct their journeys entirely on one airline. This is a distinct benefit to them, because of easier and better coordinated connections, and reflects the change in the nature of airlines from route-limited carriers to national providers of transportation services. The development of hubs has substantially facilitated that transformation.

In 1978, 64.6 percent of total origin-and-destination trips were performed using a direct flight and 35.4 percent of those trips were performed using connecting flights. Of the connecting flights, 19.1 percent were on-line and 16.3 percent were interline. The proportion of trips performed using a direct flight declined modestly to 61.3 percent in 1988. However, the on-line compared to interline mix of connecting flights changed radically between 1978 and 1988. The on-line share of connecting traffic had increased last year to 36.6 percent and the interline share had fallen to only 2.1 percent. This meant that in 1988 almost 98 out of every 100 passengers used a single airline to travel.

Another element of the transformation of airlines into national providers of air transportation has been the substantial expansion of both service and competition at spoke airports. Our study sampled airline schedules at 25 typical spoke airports and found that on average those airports received service from almost twice as many airlines in 1988 as in 1978: 6.3 versus 3.3. (Attachment L.) In addition, those cities received on-line service to or from over twice as many destinations in 1988 than they did in 1978. Finally, the number of competitive destinations had increased sixfold, from one out of six to almost one out of two.

These results clearly indicate that hub airlines are not exercising a stranglehold on spoke communities. Competition at spoke cities has risen substantially since deregulation. The growth in the number of hubs and the expansion of service at them have had astonishingly beneficial consequences for the typical spoke community.

OTHER CONSIDERATIONS

Domestic air fare increases during the last year have led some observers to forecast the decline of economic air transportation for the public. That alarm is unfounded. The recent fare increases occurred against a backdrop of historically low airline industry profit margins, rapidly rising fuel costs, and enormous new orders of airline aircraft. Profit margins, whether expressed in operating or net terms, have been anemic for U.S. airlines during the last five years:

Profit Margins (Percent)

	1984	1985	1986	1987	1988
Operating	4.9	3.1	2.6	4.3	5.4
Net	1.9	1.8	(0.5)	1.0	2.6

These financial results are not indicative of an industry that is extracting monopoly profits from its customers. They are well below the average profit margins of U.S. industry during those years. The airline industry in 1988 ranked 68th among the 71 industries that our study examined in terms of profitability as a percentage of sales. (Attachment M.)

Between October 1988 and February of this year, the average price of jet fuel that airlines use for their domestic operations increased by 10 cents per gallon. This translates into almost $1.5 billion annually in additional costs for our industry.

Because of traffic increases, aircraft fleet maturation, the desire to acquire more efficient equipment, and noise concerns, U.S. airlines have embarked upon an ambitious aircraft acquisition program. As of April 1 of this year, U.S. scheduled airlines had firm orders for 940 aircraft valued at $53.1 billion and options for 1,158 additional aircraft valued at $42.6 billion. Airlines need the wherewithal to finance these purchases. If they do not obtain that financing, the demands of the travelling public will be unmet in the 1990s.

One criticism of hub operations assumes that competition at a hub can only meaningfully occur if another hubbing airline is added to the airport. As our study has indicated, the extent of competition can only be determined by examining individual city pairs. Quite clearly, competition is robust in city pairs. In addition, those provisions of airport leases that have attracted attention, especially the majority-in-interest clause, serve a pro-competitive function. They redress the pronounced negotiating imbalance between the airport operator, which typically is a monopoly provider of services, and the airlines which must bear the cost of airport services and improvement projects. Without such provisions, there would be a serious risk that airlines, and therefore ultimately travelers, would be saddled with unnecessary, expensive services and improvement projects.

The American traveler has enjoyed remarkable fare and service benefits during this decade in substantial measure because of hubs. We believe that airline hub operations have been subjected to unreasonable criticism. The vehemence and persistence of that criticism seem to be attributable to cursory examinations of the hub phenomenon and anecdotal experiences in the marketplace. Detailed, market-by-market analysis, which our study relied upon, reveals a system that has provided and continues to provide extraordinary benefits to the consumer.

ATTACHMENT A

AIRPORTS INCLUDED IN THE ATA STUDY

HUBS

Atlanta
Baltimore
Charlotte
Chicago-MDW
Chicago-ORD
Cincinnati
Cleveland
Dallas-DAL
Dallas-DFW
Dayton
Denver
Detroit
Houston-HOU
Houston-IAH
Kansas City
Las Vegas
Memphis
Milwaukee
Minneapolis
Nashville
Newark
Orlando
Philadelphia
Phoenix
Pittsburgh
Raleigh/Durham
Salt Lake City
St. Louis
Syracuse
Washington-IAD

LARGE NON-HUBS

Albuquerque
Austin
Boston
Buffalo
Burbank
Columbus
Ft. Lauderdale
Hartford
Indianapolis
Los Angeles
Miami
New Orleans
New York-JFK
New York-LGA
Norfolk
Oakland
Oklahoma City
Ontario
Orange County
Portland
Sacramento
San Antonio
San Diego
San Francisco
San Jose
Seattle
Tampa
Tucson
Washington-DCA
West Palm Beach

ATTACHMENT B

U.S. SCHEDULED AIRLINES YIELD
(REVENUE PER PASSENGER MILE)
SYSTEM SCHEDULED SERVICES

				-----PERCENT CHANGE------		
	YIELD	CPI	CONSTANT DOLLAR YIELD	YIELD	CPI	CONSTANT DOLLAR YIELD
	INDEX	INDEX	INDEX			
1978	100.0	100.0	100.0	-1.5	7.7	-8.5
1979	104.9	111.3	94.3	4.9	11.3	-5.7
1980	132.6	126.3	105.0	26.3	13.5	11.3
1981	149.0	139.4	106.9	12.4	10.4	1.8
1982	142.0	148.0	96.0	-4.7	6.1	-10.2
1983	140.4	152.7	91.9	-1.1	3.2	-4.2
1984	146.3	159.3	91.9	4.2	4.3	-0.1
1985	140.9	165.0	85.4	-3.7	3.6	-7.0
1986	130.3	168.0	77.5	-7.5	1.9	-9.2
1987	133.3	174.2	76.5	2.3	3.6	-1.3
1988	143.3	181.4	79.0	7.5	4.1	3.2

ATTACHMENT C

AVERAGE FARE LEVELS AT HUB AND LARGE NON-HUB
AIRPORTS RELATIVE TO THE INDUSTRY AVERAGE

3rd Quarter 1980,1984 & 1988

	Average Fare Index (Industry Average = 100%)		
Year	30 Hub Airports	30 Non-hub Airports	Hub Airports Greater (less) Than Non-hubs
1980	99.92 %	96.85 %	3.07 pct. pts.
1984	99.12	96.96	2.16
1988	101.54	97.7	3.84

AIR TRANSPORT ASSOCIATION - 01-Jun-89

ATTACHMENT D

AVERAGE FARE INDEX FOR HUB AIRPORTS AND CHANGE FROM PRIOR PERIODS

3rd Qtr. 1980,1984 & 1988

HUB	1988	1984	1980	88 v 84	88 v 80
Atlanta	1.2256	1.3821	1.1026	-11.3%	11.2%
Baltimore	1.0487	1.0779	NA	-2.7%	NA
Charlotte	1.2007	1.3713	1.1041	-12.4%	8.7%
Chicago-MDW	0.7748	0.9634	0.7056	-19.6%	9.8%
Chicago-ORD	1.1099	1.1563	1.0069	-4.0%	10.2%
Cincinnati	1.2753	1.3653	1.1148	-6.6%	14.4%
Cleveland	1.0331	1.2738	1.0319	-18.9%	0.1%
Dallas-DAL	0.6606	0.6058	0.4991	9.0%	32.4%
Dallas-DFW	1.1385	1.0362	1.0210	9.9%	11.5%
Dayton	1.2028	1.3007	1.0987	-7.5%	9.5%
Denver	1.0687	0.8657	0.9384	23.4%	13.9%
Detroit	0.9388	1.0421	1.0477	-9.9%	-10.4%
Houston-HOU	0.9149	0.6585	0.6026	38.9%	51.8%
Houston-IAH	1.1890	0.8897	1.0389	33.6%	14.4%
Kansas City	0.7916	0.9875	1.1217	-19.8%	-29.4%
Las Vegas	0.7361	0.8441	0.8095	-12.8%	-9.1%
Memphis	1.2183	1.3807	1.1112	-11.8%	9.6%
Milwaukee	0.9966	1.3237	1.0473	-24.7%	-4.8%
Minneapolis	1.0989	1.0702	1.1036	2.7%	-0.4%
Nashville	1.0349	1.3185	1.1172	-21.5%	-7.4%
New York-EWR	1.0456	0.7270	1.0129	43.8%	3.2%
Orlando	0.8486	0.9191	0.8356	-7.7%	1.6%
Philadelphia	1.1212	1.0872	1.0747	3.1%	4.3%
Phoenix	0.7089	0.7693	0.9896	-7.9%	-28.4%
Pittsburgh	1.0408	1.1563	1.0696	-10.0%	-2.7%
Raleigh/Durham	1.2115	1.1697	1.1129	3.6%	8.9%
Salt Lake City	1.2144	1.1186	0.9730	8.6%	24.8%
St Louis	1.0377	1.1890	1.1104	-12.7%	-6.5%
Syracuse	1.0824	1.1265	1.1594	-3.9%	-6.6%
Washington-IAD	1.0974	1.0645	1.3045	3.1%	-15.9%
HUBS	1.0154	0.9912	0.9992	2.4%	1.6%
PASSENGERS (000)	42,344	37,298	25,495	13.5%	66.1%

Note: Industry Average Fare Level = 1.0000

Source: ATA Study Data Base.

ATTACHMENT E

AVERAGE FARE INDEX FOR LARGE NON-HUB AIRPORTS AND CHANGE FROM PRIOR PERIODS

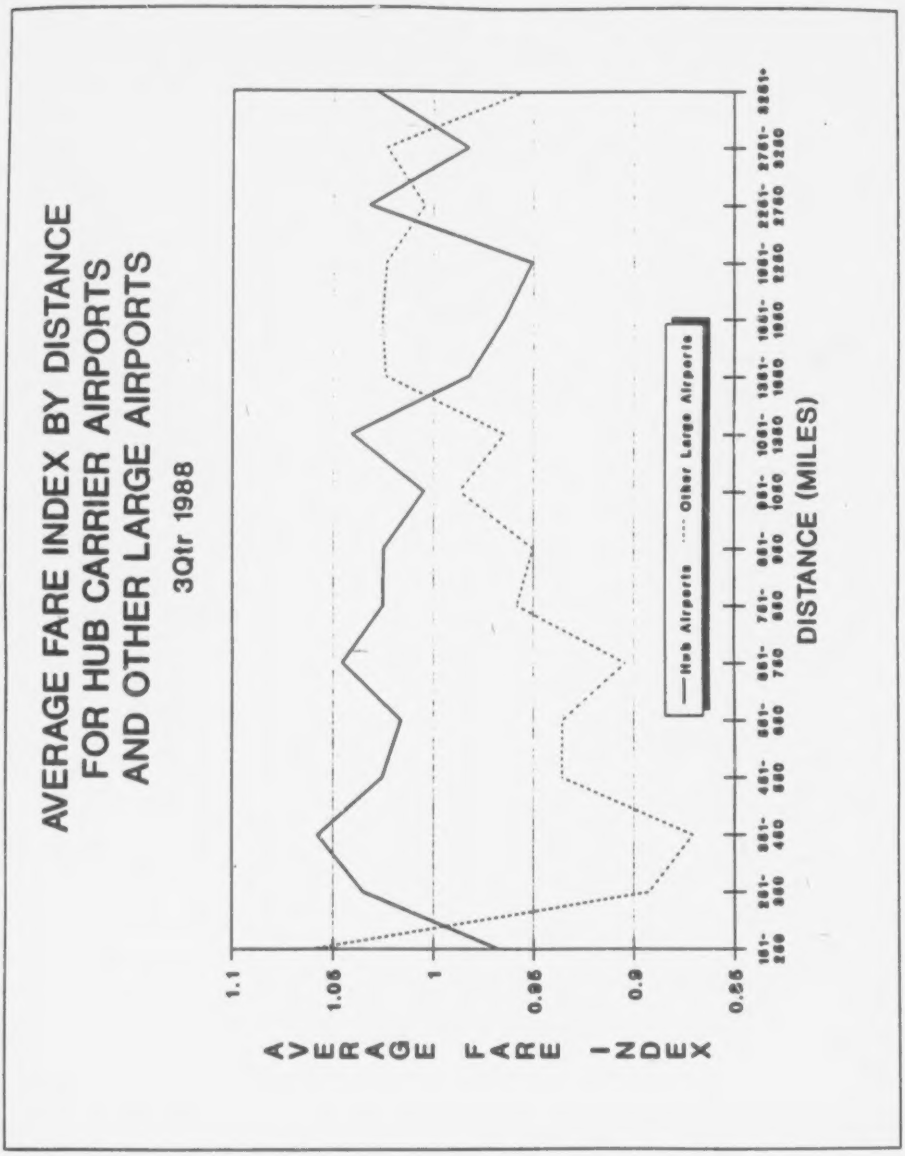
3rd Qtr. 1980,1984 & 1988

LARGE POINT	1988	1984	1980	88 v 84	88 v 80
Albuquerque	0.7780	0.7067	0.9833	10.1%	-20.9%
Austin	0.9381	0.8982	0.9749	4.4%	-3.8%
Boston	1.0603	0.9761	1.1084	8.6%	-4.3%
Buffalo	0.9717	0.9517	1.0946	2.1%	-11.2%
Burbank	0.9484	0.9610	1.3815	-1.3%	-31.3%
Columbus	1.0373	1.0275	1.0910	1.0%	-4.9%
Ft Lauderdale	0.8868	0.9420	0.8959	-5.9%	-1.0%
Hartford	1.0721	1.2111	1.0940	-11.5%	-2.0%
Indianapolis	0.9616	1.2179	1.0638	-21.0%	-9.6%
Los Angeles	0.9742	0.9010	0.8844	8.1%	10.2%
Miami	0.8926	0.9510	0.9393	-6.1%	-5.0%
New Orleans	0.9451	0.9087	0.9622	4.0%	-1.8%
New York-JFK	1.0449	1.0316	0.8651	1.3%	20.8%
New York-LGA	1.0529	1.0362	1.0835	1.6%	-2.8%
Norfolk	0.9716	0.9041	1.0966	7.5%	-11.4%
Oakland	0.9171	0.8325	0.7886	10.2%	16.3%
Oklahoma City	0.9239	0.9444	1.0960	-2.2%	-15.7%
Ontario	0.9059	0.8904	0.8574	1.7%	5.7%
Orange County	1.0770	1.0419	0.8663	3.4%	24.3%
Portland	1.0252	1.0361	1.0187	-1.1%	0.6%
Sacramento	1.0074	0.9769	0.9084	3.1%	10.9%
San Antonio	0.8541	0.8532	0.9260	0.1%	-7.8%
San Diego	0.8138	0.8599	0.9672	-5.4%	-15.9%
San Francisco	0.9490	0.9827	0.9553	-3.4%	-0.7%
San Jose	1.0062	0.9657	0.9087	4.2%	10.7%
Seattle	1.0246	1.0881	0.9895	-5.8%	3.5%
Tampa	0.9612	1.0154	0.9209	-5.3%	4.4%
Tucson	0.8863	0.9183	1.0077	-3.5%	-12.0%
Washington-DCA	1.0764	1.1201	1.1194	-3.9%	-3.8%
West Palm Beach	0.9096	0.9088	0.9140	0.1%	-0.5%
LARGE POINTS	0.9770	0.9842	0.9685	-0.7%	0.9%
PASSENGERS (000)	39,688	32,483	25,913	22.2%	53.2%

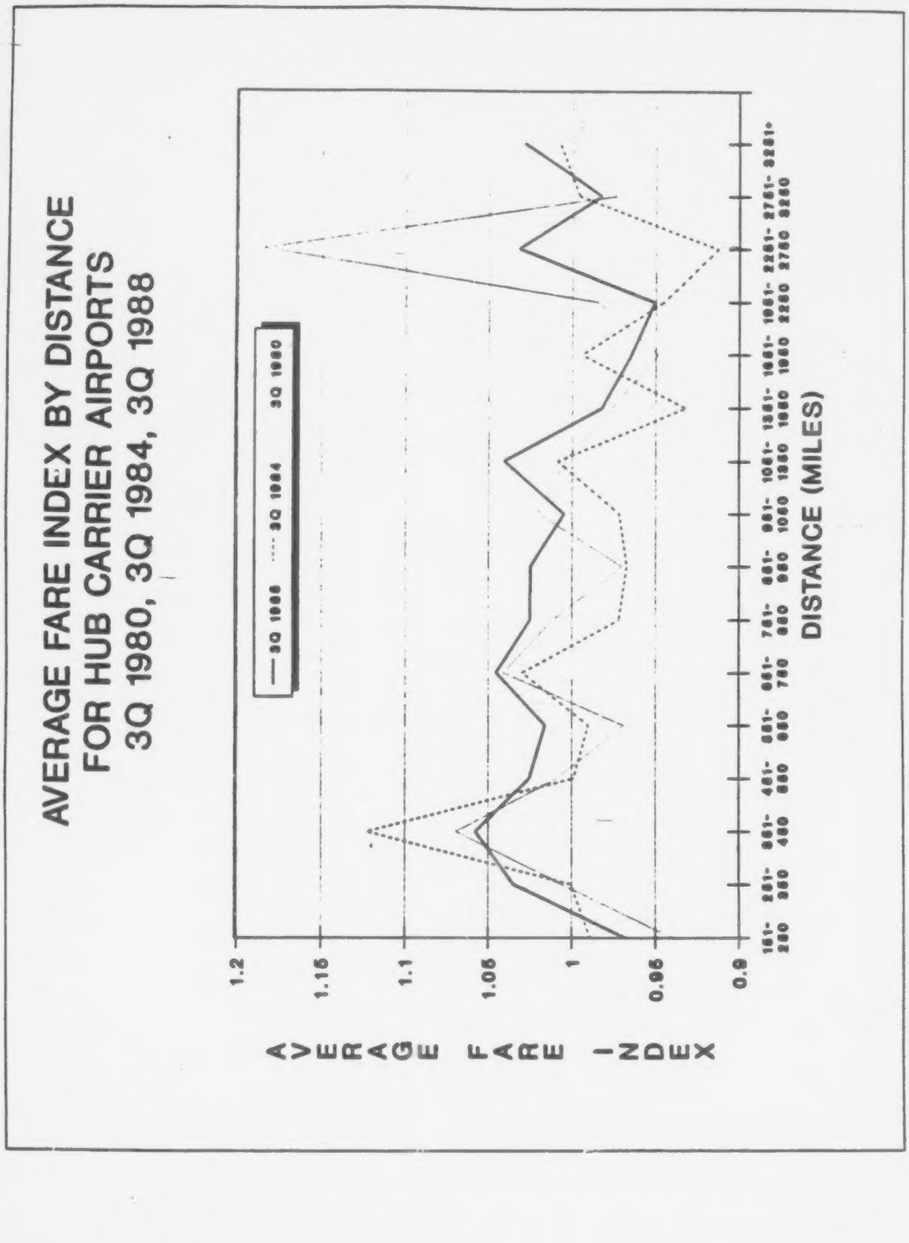
Note: Industry Average Fare Level = 1.0000

Source: ATA Study Data Base.

ATTACHMENT F



ATTACHMENT G



ATTACHMENT H

DISTRIBUTION OF PASSENGERS BY COMPETITIVE MARKET CATEGORY FOR HUBS AND LARGE NON-HUBS

Hubs

Leading Carrier Share	3 Qtr. 1980	3 Qtr. 1984	3 Qtr. 1988
0-29%	16.0	23.1	23.6
30-39%	10.7	12.5	11.1
Subtotal	26.7 %	35.6 %	34.7 %
40-49%	9.8	11.3	13.0
50-59%	9.3	10.9	11.1
60-69%	12.2	9.2	9.4
Subtotal	31.3 %	31.4 %	33.5 %
70-79%	9.2	7.3	6.7
80-89%	9.3	8.7	7.9
90-100%	23.5	17.0	17.2
Subtotal	42.0 %	33.0 %	31.8 %
Total	100.0 %	100.0 %	100.0 %

Non-Hubs

Leading Carrier Share	3 Qtr. 1980	3 Qtr. 1984	3 Qtr. 1988
0-29%	18.0	28.5	29.1
30-39%	10.8	13.6	11.1
Subtotal	28.8 %	42.1 %	40.2 %
40-49%	10.0	8.2	13.2
50-59%	9.9	10.8	14.8
60-69%	9.8	12.2	7.9
Subtotal	29.7 %	31.2 %	35.9 %
70-79%	8.7	8.3	6.7
80-89%	6.6	7.2	5.5
90-100%	26.2	11.2	11.7
Subtotal	41.5 %	26.7 %	23.9 %
Total	100.0 %	100.0 %	100.0 %

ATTACHMENT I

DISTRIBUTION OF O&D PASSENGERS AT HUB CITIES BY NONSTOP SERVICE COMPETITION

12 Months Ended Sept. 30,1988

	True O&D Passengers (000),Markets with:				Percent of City Total			
Hub City	2/More N/S Carriers	One N/S Carriers	No N/S Carriers	City Total	2/More N/S Carriers	One N/S Carriers	No N/S Carriers	City Total
Atlanta	11,808	1,411	1,066	14,285	82.7%	9.9%	7.5%	100.0%
Baltimore	1,596	1,897	1,380	4,873	32.8%	38.9%	28.3%	100.0%
Charlotte	1,023	1,610	520	3,153	32.4%	51.1%	16.5%	100.0%
Chicago	24,658	1,510	1,189	27,357	90.1%	5.5%	4.3%	100.0%
Cincinnati	1,257	1,538	608	3,403	36.9%	45.2%	17.9%	100.0%
Cleveland	3,301	1,178	1,311	5,790	57.0%	20.3%	22.6%	100.0%
Dallas	15,558	1,453	1,166	18,177	85.6%	8.0%	6.4%	100.0%
Dayton	310	905	665	1,880	16.5%	48.1%	35.4%	100.0%
Denver	9,453	928	1,626	12,007	78.7%	7.7%	13.5%	100.0%
Detroit	6,877	2,699	1,750	11,326	60.7%	23.8%	15.5%	100.0%
Houston	8,741	2,899	1,878	13,518	64.7%	21.4%	13.9%	100.0%
Kansas City	3,083	1,409	1,470	5,962	51.7%	23.6%	24.7%	100.0%
Las Vegas	5,641	2,312	2,398	10,351	54.5%	22.3%	23.2%	100.0%
Memphis	630	1,545	556	2,731	23.1%	56.6%	20.4%	100.0%
Milwaukee	884	918	1,053	2,855	31.0%	32.2%	36.9%	100.0%
Minneapolis	3,434	3,922	1,015	8,371	41.0%	46.9%	12.1%	100.0%
Nashville	1,094	1,702	601	3,397	32.2%	50.1%	17.7%	100.0%
New York City	38,244	2,147	5,558	45,949	83.2%	4.7%	12.1%	100.0%
Orlando	6,939	1,543	2,558	11,040	62.9%	14.0%	23.2%	100.0%
Philadelphia	5,291	2,236	2,039	9,566	55.3%	23.4%	21.3%	100.0%
Phoenix	9,313	1,657	1,738	12,708	73.3%	13.0%	13.7%	100.0%
Pittsburgh	2,255	3,130	737	6,122	36.8%	51.1%	12.0%	100.0%
Raleigh/Durham	1,268	835	835	2,938	43.2%	28.4%	28.4%	100.0%
Salt Lake City	1,271	1,935	793	3,999	31.8%	48.4%	19.8%	100.0%
St. Louis	3,428	3,517	793	7,738	44.3%	45.5%	10.2%	100.0%
Syracuse	661	552	901	2,114	31.3%	26.1%	42.6%	100.0%
Washington D.C.	12,030	3,279	2,676	17,985	66.9%	18.2%	14.9%	100.0%
Total	180,048	50,667	38,880	269,595	66.8%	18.8%	14.4%	100.0%

Source: ABC Airline Schedule Tapes.

ATTACHMENT J

NONSTOP MARKETS SERVED AT HUB AND OTHER LARGE CITIES

1979 and 1989

Airport Group		No. of N/S Mkts.		Change		Ave N/S
	No. of	March	March			Markets
Carrier Hub Airports	Cities	1979	1989	Absolute	Percent	Per Airpo
Established Hub Cities	9	753	856	103	13.7%	95.1
Newer Hub Cities	18	807	1,043	236	29.2	57.9
Total	27	1,560	1,899	339	21.7	70.3
Other Cities						
Large (FAA) Cities	9	402	404	2	0.4%	45.9
Medium (FAA) Cities	24	503	507	4	0.8	21.0
Total	33	905	911	6	0.7	27.6

Source: Table 6.3

ATTACHMENT K

AVERAGE FARE DIFFERENCE FOR SINGLE PLANE VS. CONNECTING SERVICE AT SAMPLE CITIES

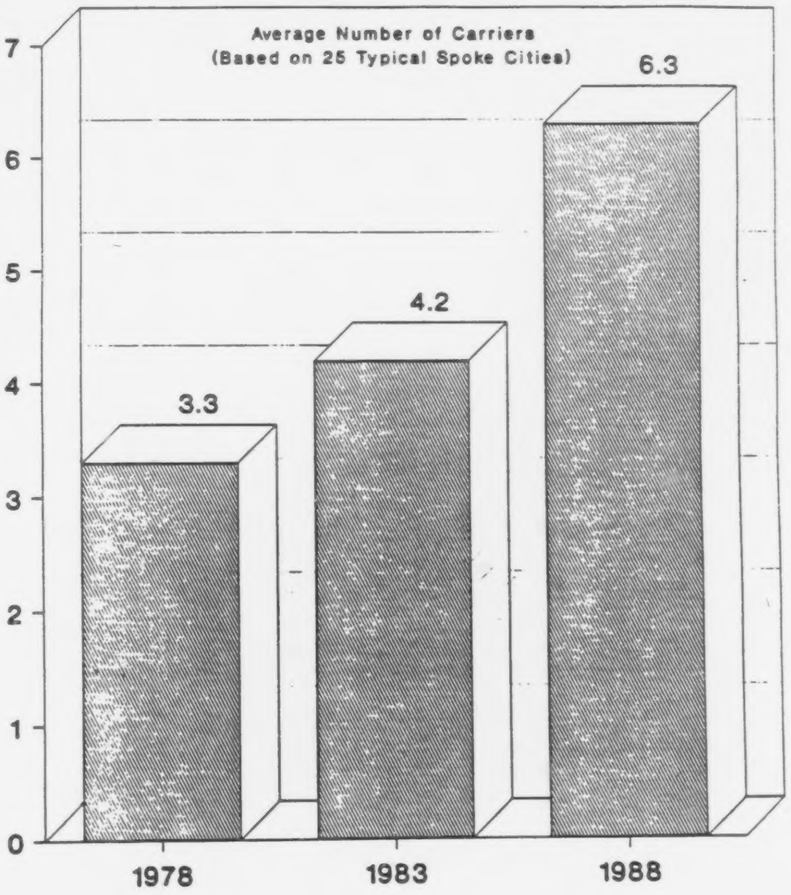
3rd Quarter 1988

Airport	# of Mkts In Sample	Avg Difference In Fare For Single Plane Vs. Connecting Service
Non Hubs		
Boston	27	23.9%
Indianapolis	27	15.9%
Los Angeles	34	23.7%
Hubs		
Charlotte	23	14.3%
Cincinnati	28	23.4%

Source: Table 6.9

ATTACHMENT L

THE NUMBER OF AIRLINES SERVING SPOKE CITIES HAS INCREASED SUBSTANTIALLY SINCE DEREGULATION



Source: CAB/DOT O&D Survey, Table 10.

ATTACHMENT M

Page 1 of 2

IN 1988, AIRLINES RANKED 68th AMONG 71 INDUSTRIES IN PROFITABILITY

RANK	INDUSTRY	SALES (mil)	PROFIT (mil)	HHI	PROFIT MARGIN
1	Drugs	$48,387	$7,097	904	14.67%
2	Metals & Mining	$6,250	$680	4,664	10.88%
3	Telecommun. Service	$140,631	$13,594	1,160	9.67%
4	Computer Software	$12,962	$1,246	1,758	9.61%
5	Chemicals-Basic	$74,776	$7,104	2,713	9.50%
6	Mining & Metals (Gen)	$24,939	$2,276	2,405	9.13%
7	Computers & Peripherals	$126,891	$10,836	2,458	8.54%
8	Chemicals Diversified	$36,040	$3,060	1,513	8.49%
9	Newspapers	$20,148	$1,660	1,093	8.24%
10	Chemicals (Specialty)	$34,783	$2,759	445	7.93%
11	Beverage	$37,021	$2,799	2,463	7.56%
12	Publishing	$20,482	$1,536	1,348	7.50%
13	Restaurants	$13,128	$981	2,027	7.47%
14	Medical Supplies	$36,908	$2,749	1,292	7.45%
15	Railroads	$34,545	$2,537	1,645	7.34%
16	Paper/Forest Products	$86,188	$6,240	634	7.24%
17	Tobacco	$63,654	$4,501	3,271	7.07%
18	Toiletries	$10,354	$723	2,238	6.98%
19	Industrial Services	$20,850	$1,442	708	6.92%
20	Electrical Equipment	$86,944	$5,857	2,402	6.74%
21	Recreation	$23,791	$1,476	1,102	6.20%
22	Semiconductors	$23,865	$1,479	2,188	6.20%
23	Precision Instruments	$27,128	$1,640	4,046	6.05%
24	Steel-Integrated	$38,089	$2,296	2,735	6.03%
25	Coal/Alternative Energy	$7,406	$432	1,623	5.83%
26	Office Equipment/Supplies	$23,921	$1,370	2,486	5.73%
27	Household Products	$34,389	$1,969	3,831	5.73%
28	Steel-Specialty	$3,447	$196	2,587	5.69%
29	Maritime	$3,546	$198	4,181	5.58%
30	Natural Gas (Distribution)	$21,724	$1,169	1,046	5.38%
31	Metal Fabrication	$9,807	$518	1,069	5.28%
32	Machinery-Construction	$23,079	$1,209	2,836	5.24%
33	Furniture	$8,536	$447	1,490	5.24%
34	Telecommun. Equipment	$6,930	$356	5,520	5.14%
35	Petroleum	$298,104	$15,076	1,324	5.06%
36	Financial Services	$57,621	$2,830	2,170	4.91%
37	Apparel	$10,035	$489	1,162	4.87%
38	Hotels & Gaming	$15,047	$731	2,779	4.86%
39	Auto Manufacturing	$233,303	$11,172	3,616	4.79%
40	Steel	$5,436	$253	1,414	4.65%
41	Packaging Containers	$9,666	$448	1,177	4.63%

ATTACHMENT M

Page 2 of 2

IN 1988, AIRLINES RANKED 68th AMONG 71 INDUSTRIES IN PROFITABILITY

RANK	INDUSTRY	SALES (mil)	PROFIT (mil)	HHI	PROFIT MARGIN
42	Broadcast	$12,896	$596	2,346	4.62%
43	Machine Tool	$6,614	$305	1,720	4.61%
44	Advertising	$4,753	$217	2,289	4.57%
45	Cement	$4,244	$192	1,779	4.52%
46	Electronic	$21,486	$968	643	4.51%
47	Toys & School Supplies	$4,305	$191	2,689	4.44%
48	Food Processing	$110,443	$4,784	507	4.33%
49	Auto Parts (Replacement)	$8,959	$375	1,726	4.19%
50	Machinery-Industrial	$26,814	$1,083	663	4.04%
51	Tires & Rubber	$12,705	$507	7,430	3.99%
52	Auto Parts (Original)	$13,907	$546	2,129	3.93%
53	Trucking & Leasing	$14,159	$553	2,023	3.91%
54	Aerospace	$115,822	$4,500	863	3.89%
55	Real Estate	$1,987	$77	1,713	3.88%
56	Building Materials	$33,462	$1,281	849	3.83%
57	Home Appliances	$11,814	$431	2,235	3.65%
58	Shoes	$7,616	$258	2,159	3.39%
59	Retail Stores	$172,390	$5,709	1,459	3.31%
60	Manufactered Housing/RV's	$3,727	$116	2,744	3.11%
61	Securities Brokers	$38,862	$1,183	1,911	3.04%
62	Retail Building Supply	$7,703	$224	2,202	2.91%
63	Medical Services	$19,803	$549	1,442	2.77%
64	Textiles	$8,525	$232	1,670	2.72%
65	Natural Gas (Diversified)	$53,287	$1,430	1,267	2.68%
66	Drug Stores	$11,526	$293	2,775	2.54%
67	Home Building	$9,638	$227	1,288	2.36%
68	AIRLINES	$54,361	$981	1,262	1.80%
69	Grocery	$89,400	$1,134	1,307	1.27%
70	Oilfield Services	$21,170	$235	1,669	1.11%
71	Food Wholesale	$54,653	$586	1,518	1.07%
	Total/Average	$2,777,782	$155,194	1,837	5.59%

SOURCE: VALUE LINE SURVEY 1988

Senator FORD. Thank you, Mr. Aaronson. I have several questions, and I will turn it over to my colleagues.

When you surveyed the 71 entities that—what are those 71 entities where you compared airlines as it relates to income versus profit? Are those sales or what are they? What kind of entities are these? You said 71.

Mr. SMICK. They are industries.

Senator FORD. All right, give me an example of industries that you compared apples to apples and oranges to oranges here if you can get the 68.

Mr. SMICK. Telecommunication services, newspapers, beverages.

Senator FORD. I only have one newspaper in my town and that is a monopoly.

Mr. SMICK. Well, then, it would be likely to show.

Senator FORD. And we do not have any airlines after one went bankrupt this week. So, go ahead.

Mr. SMICK. Well, we have 71 industries. They are the 71 industries as defined by the Value Line Survey.

Senator FORD. So, you took telecommunications, newspapers, all that, and you wound up third from the bottom?

Mr. SMICK. That is correct.

Senator FORD. And yet by having hubs, they give you the right to have greater rates, to have greater profitability in order to get other equipment and do the sort of things. Am I correct that that is what you are trying to tell us?

Mr. AARONSON. Mr. Chairman, I think first and foremost the hub and spoke system permits the carriage of more passenger than——

Senator FORD. That is volume, is it not?

Mr. AARONSON. That would be the first thing and then the economics really follow from that. It is interesting. There are some higher costs associated with an airline operating through a hub, but when you consider all of the economic ramifications and the traffic that can be generated, it still is a rational way of operating from an airline's perspective.

And as we have argued, it offers great transportation benefits to the public.

Senator FORD. Have the prices gone up faster than growth?

Mr. AARONSON. Than growth in numbers of passengers?

Senator FORD. Yes, or growth of hubs. You talked about growth of service as a result of hubs. Have the fares gone up a greater percentage than the increase in service?

Mr. AARONSON. Let us go back to the chart where we compared fares in the industry. Between 1978 and 1988 and the line, the dark blue line shows that fares have not gone up at all.

If you take an average through the period, 1981-1988—now, this is before making any adjustment for inflation where you would normally expect the price of a product to go up—in actual dollars the price has remained steady, and that is one of the reasons we believe that air transportation in large part because of deregulation remains such an excellent value in this economic.

Senator FORD. Now, how can you look at a fellow and tell him his price has gone down since deregulation when it has gone up 400 percent?

Mr. **Aaronson**. Mr. Chairman, as I think the GAO people mentioned——

Senator **Ford**. I am not asking about the GAO. I am asking you, as a representative of the airlines to tell me why in the last 10 years my ticket has gone up 400 percent.

Mr. **Aaronson**. The ticket that you purchased may well be that much higher. However, the fare that you were paying today is not dissimilar from the higher types of fares that were available in the earlier period that you were talking about.

You are really changed, Mr. Chairman, in your category of travel so that you are buying a higher priced ticket in all likelihood because of the constraints in your schedule where you have to fly at a certain time. You do not have the flexibility to take advantage of discount fares.

Senator **Ford**. Well, normal business is the same way, is it not? They never know when they are going to be called to go to New York or California or 400 miles away, so they have to run down and get a ticket from their agent or the airport and fly. Their cost will be the same as mine. Their schedule has not changed any.

Mr. **Aaronson**. Some businessmen can take advantage of discount fares, and some have exactly the kinds of constraints on their schedule that you do.

Senator **Ford**. Well, you say my schedule has changed, but I do not have a choice in flights. I am a captive shipper, as I said a while ago. If I do not fly with one airline, I do not fly.

You talk about the service. Let me ask you this. How many major airlines own commuters or a share of commuters?

Mr. **Aaronson**. At least half of the major airlines.

Senator **Ford**. At least half. Would you say wholly owned? How many would be wholly owned, 50 percent?

Mr. **Aaronson**. Of what universe, Mr. Chairman?

Senator **Ford**. I do not know what universe. I thought this one. But what I am saying is how many of the major airlines have wholly owned commuters?

Mr. **Aaronson**. I believe it is about three, but we would have to check that and supply it for the record.

Senator **Ford**. Only three major airlines?

Mr. **Aaronson**. Approximately. Approximately three of the major carriers have wholly owned commuter subsidiaries.

Senator **Ford**. That just concentrate on their hubs or their connections?

Mr. **Aaronson**. Generally, yes.

Senator **Ford**. Only three. What about——

Mr. **Aaronson**. I would really like to supply correct information for the record if I might.

[The following information was subsequently received for the record:]

Six (6) major air carriers hold equity positions in commuter airlines. Of those six, three (3) have wholly owned commuter airline subsidaries.

Senator **Ford**. All right. Let us get into the commuter industry, then, raising their prices. Is the reverse true now that commuters are beginning to pay for the long hauls, where the major aircraft or the long flights were paying for the commuters prior to deregulation?

Mr. **Smick**. I will take that question. The answer, sir, is that when you pay a fare, it is not a commuter's fare or a single airline.

Senator **Ford**. Oh, yes, it is, because on my ticket it tells me that commuter flight from Owensboro to X and then from X to Washington. Oh, yes, my commuter fare is on my ticket.

Mr. **Smick**. As a separate fare?

Senator **Ford**. Absolutely. Yes, sir. It is shown on the bottom of my ticket. If you want them, I will show them to you. That indicates that you have not looked at my ticket.

Mr. **Smick**. I have not looked at your ticket, sir.

Senator **Ford**. That is correct, and that is personal. I do not know what you do about painting with a broad brush, but I have flown at least 48 weeks a year for the last 14 years, so I can tell you something about wearing out a seat on an airplane.

Mr. **Smick**. The majority of fares that include travel on a commuter airline are a single fare from the origin to the destination.

Senator **Ford**. Well, is it easy to ask the agent how much my fare is from X to Y and from Y to Z?

Mr. **Smick**. Generally, the fare that would be quoted would be a single fare from Owensboro to Washington.

Senator **Ford**. Can I get the price from Owensboro to X from the agent and then from X to Y? I am not naming towns because I would be getting into airlines and I do not want to do that.

Mr. **Smick**. Normally the fare that is quoted is a single fare.

Senator **Ford**. I understand that. Your total cost is $546 where it used to be $138 ten years ago. I understand that very well. But when they sit down to charge my ticket, there is so much from my town to the hub and so much from the hub to Washington. The commuter gets so much of that money, because if it was not designated in that ticket, how in the world would you know how much to pay the commuter.

Mr. **Smick**. Well, the answer to that, sir, is there are agreements between airlines whether they are owned or not owned.

Senator **Ford**. That is true, but if they are wholly owned, then they get it all, do they not, and the price on the commuter is much higher than the major airline itself?

Mr. **Smick**. That is correct.

Senator **Ford**. So the commuter then is beginning to pay for the major airline or that is beginning to help that, is that not true? You just said that, so I will not ask any further questions.

How many hubs did we have before deregulation, Mr. Aaronson? You said we had some.

Mr. **Aaronson**. I would have to give you an exact count subsequently, Mr. Chairman. Approximately four or five instead of 30.

Senator **Ford**. Four or five instead of 30. So, deregulation has given us what, that is a 1,000 percent increase?

Mr. **Aaronson**. It is approaching that.

Senator **Ford**. All right. Then you are going to say that the cost of travel on a commuter has skyrocketed compared to the ticket from New York to California. A short 50-minute flight would cost me as much as a round trip 50-minute flight, which would be an hour and 40 minutes. That time in the air on a commuter would cost me as much as a flight from New York to California.

Mr. **Smick**. There are low fares from New York to California. There are normal coach fares New York to California which would be considerably higher than that.

Senator **Ford**. But if I am lucky, I would get the lower fare, would I not, and it would equal or be less than my commuter fare?

Mr. **Smick**. It could be.

Senator **Ford**. We are beginning to see some of the problems now, are we not, for some of those that are not at a hub or at a spoke.

Mr. **Smick**. I think, sir, that your question relates to short haul travel for the most part.

Senator **Ford**. And the short haul travel is owned by the major airlines and they are sticking it to us pretty good.

Mr. **Smick**. Well, I think there are certain costs which were alluded to earlier.

Senator **Ford**. You say it nicer than I do. I say I am getting stuck and you say it is a little bit of difference in cost. I am a little more blunt than you are, and you are probably making more money than I am. But your study indicates that 21 of the 30 hub airports studied have fares above and I say 20 to 30 percent above the industry average, is that not correct?

Mr. **Smick**. That is correct, sir.

Senator **Ford**. Does this not suggest that the GAO conclusion is basically correct?

Mr. **Smick**. I do not believe so at all.

Senator **Ford**. Why?

Mr. **Smick**. We looked at the reasons why fares are higher at points be they hubs or non-hubs. We found certain linkages in relationships which describe very precisely why there are differences in fares, and they are contained in the study, and they relate to a number of variables other than concentrating.

Senator **Ford**. But regardless of that, 21 or 30 hubs you studied had 20–30 percent higher rates, and you just said yes.

Mr. **Smick**. None had 30 percent higher.

Senator **Ford**. Well, how about 29?

Mr. **Smick**. No, I do not believe that is the case, sir.

Senator **Ford**. What is the case, then? If you look on page 1–12, if you are looking for it, I will give it to you, and it shows the industry average above the line and industry average below the line. That is your study. It is Figure 1–4 or 1.4. It is all right there. It shows you all the hubs and up above the line, and these are the ones below the line. Is that not correct?

Mr. **Smick**. I am sorry, I thought I understood your question to be 20 percent or more above.

Senator **Ford**. All right, I said 20–30 percent, but you said 20 percent or more and that could be 30 percent.

Mr. **Smick**. Well, I see against the industry average in that same chart probably three or four that had fares that were more than 20 percent above the average.

Senator **Ford**. Well, it looks like there are 1, 2, 3, 4, 5 I can see right quick, and I have my glasses on. But anyhow, they are above and you have got some close to 30 percent. We will say somewhere between 20 and 28 percent. There is one that is right up there close to 30. How do you account for the differences between your study and that of GAO, and I want that again.

Mr. **Smick**. The differences are that we looked at a number of factors which described differences between the fares at one point and another point. We looked at ten factors. Concentration was one of those factors. We tested each of those ten factors singularly and in combination in order to describe why fares differ from one point to another.

We found a relationship which related to service to the cost characteristics of the carriers providing the service to such factors as the mix between business and discretionary travelers, airport constraints. These were factors which described that relationship. Competition in individual city pair markets, not concentration as measured in terms of share of local and transit passengers at any given airport.

Senator **Ford**. Mr. Aaronson stated and maybe showed a chart that today if I made my note right, that the fares today are still higher than they in 1981, even without adjusting for inflation. Is that true for all airports including the small and medium sized markets?

Mr. **Smick**. I do not think we can answer that question specifically from the data we developed.

Mr. **Aaronson**. Certainly what we presented, Mr. Chairman, is a national average. I think you are aware of that.

Senator **Ford**. But you said that without adjusting for inflation you are still higher.

Mr. **Aaronson**. No, we are still the same, Mr. Chairman. Fares have not gone up in this entire period, 1981–88. If you adjusted for inflation, you would see that fares had gone down 27 percent in real purchasing power. Again, for a national average.

It is really quite a remarkable performance.

Senator **Ford**. Well, how do fares compare to those offered in 1984?

Mr. **Aaronson**. Again, we can follow it on the chart. One of the things that characterizes airline prices over time is whenever the fares go up, you can be sure that in a few months they are going to go down and when they go down, you can be sure that they are going to be going back up again. That is accounted for by seasonality which influences the level of demand for the service. It is affected by the conditions in the economy which also affect demand, and it is affected by costs such as fuel prices. So, you really see that in a chart like this where the fares go up and down and up and down.

But what I was depicting is that for an eight-year period here, the fares over that whole time have remained constant.

Senator **Ford**. Well, you had to cut your study off at a period, and I am not going to belabor this much longer, but recent reports indicate that nationwide fares have increased significantly, particularly in the last several months. And does this not mean that fares at hubs are, therefore, increasing faster than the industry average?

Mr. **Aaronson**. Mr. Chairman, fares have gone up in the last several months. There is not enough complete data of the sort that this detailed study relied on to have been able to include the last several months in the analysis.

The full fares, for example, have gone up about 6 percent. The discount fares have gone up about 9 percent in recent months. We do not have enough information. We do not have the detail to be able to compare hubs versus other locations for that reason instead of changes.

Senator FORD. Well, 9 percent of ten years ago would be one thing. 9 percent of last week would be another. So, my ticket would go up $40 roughly.

Mr. AARONSON. It might well. Again, I would suggest that one has to look at what has been the price level over the period of time, and we are in a period where the airlines are incurring higher costs. If you think about the price at the gas pump when you go to fuel your car, there have been dramatic increases in the last few months.

Senator FORD. What about all that time when they had dramatic decreases, you know, for months and months?

Mr. AARONSON. You do see some decreases, Mr. Chairman. I would suspect that that is very much reflected in this chart.

Senator FORD. Senator Danforth.

Senator DANFORTH. Mr. Chairman, thank you.

Mr. Aaronson, Mr. Smick, thank you and thank you also for your visit yesterday afternoon. I think that what you have done is to set up a straw man and knock him down very effectively, but I do not think the straw man is the issue before us. I think the straw man you have created is hubbing and the opposition to hubbing. You have come here to make a case for the existence of hub airports, but I do not think we question that, and I do not think the GAO report questions that. In fact, in the direct testimony of Mr. Mead and twice at least during questions to him he said that the fact that it is a hub airport did not necessarily mean that there was concentration.

And in his study he included hub airports both in the concentration group and in the nonconcentration group. And I think what you have done essentially is to say well, hubbing is good and nobody really is contesting that. The issue is one of concentration.

Now, Mr. Smick, in your study, your study is for SH&E; that is, your group, your organization?

Mr. SMICK. That is correct, Senator.

Senator DANFORTH. All right, Mr. Aaronson's testimony characterizes the position of SH&E as follows. After extensive analysis, SH&E determined that there is little statistical support for the popular misconception that a correlation exists between concentration, competition and higher prices at either hub or non-hub airports. That is his characterization, Mr. Aaronson's characterization of your report.

But is that your position?

Mr. SMICK. Yes, it is.

Senator DANFORTH. Mr. Aaronson, is this the official position of the Air Transport Association of America that it is only a popular misconception that there is a correlation between concentration, competition and higher prices?

Mr. **Aaronson**. Yes, sir, that is our position. However, we have produced a very detailed and complex study. It is now put in the domain of all of us to look at along with other information. If other information were to come along that were to persuade us that that was not a correct conclusion, we would correct our position. Based upon what we have seen what we believe that is our position.

Senator **Danforth**. As a general economic principle, do you feel, Mr. Aaronson, that it is a popular misconception that there is a correlation between concentration, competition, and higher prices?

Mr. **Aaronson**. I believe that is a popular misconception. The public is reading a great deal about this in the press and has developed that impression.

Senator **Danforth**. Beyond the airline industry and just as an economic matter, is it your view and the view of your association that there is no correlation between concentration and lack of competition on the one hand and higher prices on the other?

Mr. **Smick**. I think, sir, that you are drawing a linkage between concentration and lack of competition.

Senator **Danforth**. Yes.

Mr. **Smick**. That is where we feel that linkage, particularly in the airline industry does not exist.

Senator **Danforth**. Do you?

Mr. **Smick**. We believe we have demonstrated the competition is indeed increasing. When you talk economic theory, the reason that concentration would lead to higher prices is that the supply would be restricted.

Senator **Danforth**. Right.

Mr. **Smick**. The supply is measured by any level of service that you care to look at at any of these airports is not being restricted. It is being increased and increased rapidly.

Senator **Danforth**. All right. So you are saying specifically that there is no correlation between concentration and lack of competition?

Mr. **Smick**. Yes, I am.

Senator **Danforth**. So that competition exists whether one airport has 10 percent or 90 percent of the emplanements at an airport.

Mr. **Smick**. I do not think I said that, sir. I think what I said was that we can find that airports where concentration is increasing that competition in individual city pair markets is also increasing.

Senator **Danforth**. I am asking you about economic principles because I mean you would go round and round with me about city pairs that I have never considered. But I want to know whether it is the position of the ATA and whether it is your professional opinion that there is no correlation between concentration and lack of competition.

Mr. **Smick**. I think we pointed out that concentration which includes not only local passengers but passengers in transit is not necessarily a relevant measure of competition in individual local markets. The fact that people transit are included in the carrier's share of enplaning passengers which is what is being used here to measure concentration, I do not find directly relevant to competition in individual markets.

Senator DANFORTH. It is your professional judgment, therefore, that there is no correlation between concentration and lack of competition?

Mr. SMICK. We did not find——

Senator DANFORTH. I am asking you your professional judgment. Is it your professional judgment that there is no correlation between lack of competition and concentration?

Mr. SMICK. I cannot say that as an absolute.

Senator DANFORTH. What is your professional judgment? Is there or is there not a correlation?

Mr. SMICK. If concentration were measured by increasing shares of the same traffic, local traffic, I would probably conclude that there was a diminution in competition. When you are using two different measures to establish concentration and competition, then I do not think you can draw a direct linkage between the two.

Senator DANFORTH. I am asking you a general proposition, general position. I am not asking you about your study. I am asking you a general proposition. Is it your professional opinion that there is no correlation between lack of competition and concentration?

Mr. SMICK. Yes, I would agree that there is a correlation.

Senator DANFORTH. There is a correlation. And is that the position of the ATA, Mr. Aaronson?

Mr. AARONSON. In the context of this study? Any correlation that exists would appear to us to be minimal.

Senator DANFORTH. Well, it was our view when we deregulated the airlines that if we were going to move from a regulated system to a deregulated, unregulated system, that competition was going to be necessary as a surrogate for regulation. That was our judgment. And your view, as I gather it, was that we were indulging in a popular misconception.

Mr. AARONSON. Not at all, Senator Danforth. We believe, and I presented in my testimony, several arguments to the effect that the airline industry, including that segment of the industry operating around hubs——

Senator DANFORTH. I am not—sir, I am not speaking of hubs. Please do not try to debate me on hubs. I am talking about concentration.

Now, is it your view that we were indulging in a popular misconception?

Mr. AARONSON. No, sir.

Senator DANFORTH. All right. Is it your view that competition is the necessary surrogate for regulation?

Mr. AARONSON. I think it is very important.

Senator DANFORTH. Competition is very important.

Mr. AARONSON. Yes.

Senator DANFORTH. And do you believe that it is possible to have competition at airports which are—in which there is 70, 80 percent concentration by one airline?

Mr. AARONSON. Yes, we do.

Senator DANFORTH. How?

Mr. AARONSON. As a result of what we learned from the study, we now believe that.

Senator DANFORTH. How? How could that be?

Mr. **Aaronson**. Because passengers do not fly from a hub as a market per se. They fly between two points.

Senator **Danforth**. Well, let us take the people. Say the people—and I am not going to talk about the people of St. Louis because you will say, well, you are just talking about your own constituents. Let us talk about the people of Memphis, Tennessee.

Now, do the people of Memphis, Tennessee, they fly from Memphis, right? Now, to them is there concentration at the Memphis airport?

Mr. **Aaronson**. What I am suggesting, Senator, is that that is not the most relevant question. The most relevant question is for wherever a given passenger is flying, is he flying from Memphis to San Francisco? Is he flying from Memphis to Tallahassee? Is there competition in that particular market?

Senator **Danforth**. Right. Is there?

Mr. **Aaronson**. In general there is.

Senator **Danforth**. But how?

Mr. **Aaronson**. Because in many cases the city to which the passenger is flying is itself a hub, and the carrier that is the principal operator at that hub is engaged in aggressive competition in that local market between the two points. There is also——

Senator **Danforth**. Mr. Aaronson, I am sorry, and I am sure you think that I am just unbelievably dense, but if a person shows up at an airport where 80-some percent of the emplanements are one airline, how is he going to hop onto some other airline and go to San Francisco or wherever he wants to go?

Mr. **Aaronson**. I think first of all, one has to separate the numbers as to what is the percentage of local passengers, those people who live in Memphis.

Senator **Danforth**. I am talking about a resident born and raised in Memphis, Tennessee and this hypothetical person has never before left Memphis, and he wants to go to who knows where.

Now, I do not know—I do not even know the airline in Memphis, but—what is it—what is the airline?

Senator **Ford**. Northwest.

Senator **Danforth**. And what percentage——

Senator **Ford**. 83.8.

Senator **Danforth**. All right. Where is the competition?

Mr. **Aaronson**. Mr. Smick will explain it.

Senator **Ford**. Boy, Mr. Smick, you are earning your money. You will be down to 100 pounds before this day is over.

Mr. **Smick**. Senator, the answer is competition via the Dallas hub to go to San Francisco.

Senator **Danforth**. What is that?

Mr. **Smick**. There is competition via the Dallas hub.

Senator **Danforth**. Dallas? You want to go to San Francisco?

Mr. **Smick**. He can get there by making a simple connection at Dallas or Chicago or Denver.

Senator **Danforth**. I see. You have got him routed around the country. Just get out of Memphis. By what airline does he get out of Memphis?

Mr. **Smick**. Any one of seven or eight airlines that he would care to fly.

Senator **Danforth**. Okay. But 83 percent of the possibility is one airline, right?

Mr. **Aaronson**. Not in that market.

Mr. **Smick**. Only if you measure by emplanements. Now, you said is it possible or you ask is it possible for a carrier to have 70 percent concentration and for there still to be competition in a market.

Let us look at Raleigh-Durham. American emplanes 68 percent of the passengers in that market. When you look at local passengers only, six out of every ten are carried by carriers other than American. It has less than a 40 percent share of local traffic. That is an excellent example of a case where there is concentration measured by emplanements of local plus transit passengers and competition in the local markets.

Senator **Danforth**. I have taken way too much time, but your basic theory, as I understand it, is that competition for the direct route that gets from, say, Memphis to San Francisco is provided by getting out of Memphis into some other place, say, Raleigh-Durham and then flying from there to San Francisco and therein is the competition.

Mr. **Smick**. Every hub is a spoke on another carrier's system, at least one other carrier's system. Those are alternatives for passengers.

Senator **Danforth**. But in point of fact it is true, is it not, that where there is concentration, the prices are 27 percent higher than when there is not concentration? So, your theory does not work does it?

Mr. **Smick**. Not necessarily for trips of similar distance. As I mentioned, I can explain the 27 percent difference simply by a different mix. If a particular hub is short haul in nature, it will have—and this is acknowledged in the GAO study—higher fares than at hubs which are longer haul in nature.

We looked and compared prices to traveling markets of similar distance.

Senator **Ford**. I think GAO is going to take exception to that statement.

Senator **Danforth**. That is right. The GAO says there is a correlation and, in fact, where there is concentration, the fares are 27 percent higher. And you simply say or do you deny that?

Senator **Ford**. He says 21 of the 30 they have higher fares. Some of them over 20 percent.

Mr. **Smick**. I have agreed with that, yes.

Senator **Danforth**. I am going to just ask one more question and I really apologize, Mr. Chairman.

Senator **Ford**. Do not apologize. I am enjoying it.

Senator **Danforth**. But is it a fact that your table that Senator Ford has referred to on Table 4.2 where it has the line Average Fare Index of 30 Hub Airports, Third Quarter 1988, is it a fact that the airports above the line are ones generally where there is concentration and the ones below the line are ones where generally there is not concentration?

Mr. **Smick**. No.

Senator **Danforth**. That is not right?

Mr. **Smick**. No.

Senator DANFORTH. Would you just point to the ones above the line where there is not concentration.

Mr. SMICK. Cleveland, Denver, Newark.

Senator DANFORTH. Just a second. Cleveland, Denver, Newark. Which one is Newark?

Mr. SMICK. N-e-w-r.

Senator DANFORTH. Okay. What else?

Mr. SMICK. Dulles.

Senator DANFORTH. That is I-a-d?

Mr. SMICK. Right. Houston Intercontinental.

Senator DANFORTH. Which one is that?

Mr. SMICK. I-a-h.

Senator DANFORTH. Okay. What else?

Mr. SMICK. O'Hare.

Senator DANFORTH. Which one is that?

Mr. SMICK. O-r-d.

Senator DANFORTH. All right.

Mr. SMICK. Philadelphia.

Senator DANFORTH. Okay.

Mr. SMICK. And our measure did not show Syracuse to be concentrated. GAO's showed it to be. We may have looked at different periods.

Senator DANFORTH. How about the ones below the line? How many of those below the line are where there is concentration?

Mr. SMICK. D-a-l, D-e-t, Detroit, M-d-w, Midway, would all be concentrated under the GAO definition.

Senator DANFORTH. Now, I asked Mr. Mead if he would give us for the record his comments on your report and on your testimony. And I also said at the same time to the chairman that I would hope that you would feel welcome to do the same with respect to the GAO report. And so I would hope that you would feel free to follow through with any comments you would have for the record.

Mr. AARONSON. Thank you, Senator. We most certainly will do that.

Senator DANFORTH. Thank you, Mr. Chairman.

Senator FORD. One point I want to make, and this is an actual fare of 30-day advance payment from Louisville, Kentucky, round-trip at Christmas was $236. Last week the same flight, the same time, 30-day in advance payment, $366.

Senator Pressler.

Senator PRESSLER. Thank you very much.

I really think that your study is sort of setting up, as Senator Danforth said, a strawman, and knocking it down, and not really addressing what the GAO is trying to get at here. And I think Senator Danforth's line of questioning illustrated that.

I would like to ask, for example, in Pierre, South Dakota, a passenger now pays more for a ticket to Washington, D.C. than he did 10 years ago. Also there is less service available. If that passenger asks me, "Senator, I see that the Air Transport Association has this rosy study, why is it that we pay more to travel across the country than we did before airline deregulation, and why is it that less flights are available, and what is going to be done about it?" What should my answer be?

Mr. **Aaronson**. Senator Pressler, I cannot give you a simple answer to that, because the situation most certainly varies from community to community in this country.

Senator **Pressler**. Well, in that community it does not vary; that is the way it is. I am telling you that is the way it is. I know that is the way it is.

Mr. **Aaronson**. I understand, sir. But, what I was about to say is that in the vast majority of smaller communities, service has increased over the last 10 years.

Senator **Pressler**. Well, this is our state capitol. It has decreased dramatically. And what do I say to that?

Senator **Ford**. Senator Pressler, let me ask him about Charleston, Louisville, Owensboro and we can begin to talk about 50,000 and 60,000 populated towns, and you tell me that the air service has increased in those towns, and you start picking them off from my hometown to Washington, my friend, they have not.

We deal with these things every day; we can tell you personal experiences. Then you come up here and try to tell us about the overall picture. We have very few people fly from Louisville to Los Angeles every day, you know, it is kind of tough.

Senator **Pressler**. I think you supplement my point. I do not think you know what I am talking about; I get that feeling. And your report does not address concerns that I have about these hub airports and smaller ones. And I get a feeling that we are talking about different things here entirely. I get a feeling that we are not communicating, that you do not know what the problem is from my point of view and the point of view of a lot of Americans. And I have heard it from upstate New York people; I have heard it from California people, I have heard it from people in Sacramento.

There is a real problem out there, and your study, granted it is limited to hub airports, is aimed at a narrow portion of activity. But I think you are not facing up to the problem that I face up with when I speak to the Rotary Club in Pierre, South Dakota or Rapid City or Watertown or Aberdeen or Yankton or Sioux Falls. I hear quite a different story; and what should I tell these people?

Mr. **Aaronson**. The only thing that I could suggest to you, which is even slightly encouraging, and I would not recommend you say it, is that many communities that have lost service or have not been satisfied with their service, six months later, a year later, over the last 10-year period, have found that they were then benefiting from an enormous amount of service.

This is something which has varied a great deal as the nation has gone through the deregulation process. And the vast majority of smaller communities have ended up, at this point today, with more service than they ever had before.

Senator **Pressler**. That is not true.

Mr. **Aaronson**. There are many communities where it is not true.

Senator **Pressler**. That is not true in my state. So what do I say? And we have gone through several years of this. I tell them that in six months it might change?

Mr. **Aaronson**. It is an answer.

Mr. Smick may have something to add.

Mr. **Smick**. There are a lot of ways to measure service, Senator. We did look at Sioux Falls.

Senator **Pressler**. How about Pierre?

Mr. **Smick**. I did not look at Pierre.

Senator **Pressler**. Well, I wish you would have, and Aberdeen and Watertown and Yankton and so forth. Sioux Falls is the only place in our state that might be an exception. It is funny you just looked at that.

Mr. **Smick**. We did not look just at Sioux Falls; we looked at 25 smaller points scattered throughout the country.

Senator **Exon**. Excuse me. What do you mean smaller points?

Mr. **Smick**. I mean Louisville, I mean Little Rock, Amarillo.

Senator **Exon**. Did you use population? I mean what is small to you may not be small to us, or vice versa. Population-wise?

Mr. **Smick**. No, we used passenger traffic.

Senator **Exon**. Passenger traffic?

Senator **Pressler**. The only one you looked at in my state is one that has improved. You did not look at any of the seven or eight cities where it has either gone out of business or decreased. That is a very strange study; wouldn't you agree with me?

Mr. **Smick**. I can tell you very honestly, and I was the person who selected these cities——

Senator **Pressler**. Why did you select Sioux Falls and not Aberdeen or Yankton or Mitchell or Pierre, all of whom have had just the opposite effect for the study you are presenting to the Congress of the United States? Is this the way you selected cities all across the United States, you selected the ones that would support your point of view?

Mr. **Smick**. We would have had to have analyzed every city in order to do that, and I can tell you we did not do that.

Senator **Pressler**. How did you happen to pick Sioux Falls, that is the only one in my state where there is a better picture?

Mr. **Smick**. I was not aware of that when I picked it.

Senator **Pressler**. How did you happen to pick Sioux Falls?

Mr. **Smick**. I happened to pick Sioux Falls because I was looking for a destination in that part of the country, and quite frankly, not being as familiar with the geography, that was a top-of-mind awareness.

Senator **Pressler**. Do you think that I, as a senator, when you present a study as supposedly a balanced economist or whatever, you come before me and say that you have picked the only city in my state that supports your contention, and you just did it by accident?

Mr. **Smick**. Well, I am going to tell you exactly that is the case.

Senator **Pressler**. Well, if that is the case, you have wasted my afternoon. Because I think your whole study is a lot of nonsense if you cannot give me a better reason for that, for picking Sioux Falls and not one of the seven or eight other cities that have had just the opposite effect. You just picked cities that support your study, that support the point of view you are paid to support then.

Mr. **Smick**. Senator, I can tell you with great sincerity that I looked at a list of cities, which boarded traffic——

Senator **Pressler**. Did you look at Aberdeen, South Dakota?

Mr. **Smick**. I did not. I looked at a list of cities that boarded traffic within a certain range, those were the number 100 to number 300 cities in the country. They were larger markets.

Senator **Pressler**. How about Rapid City, Yankton, Mitchell, Pierre, Huron, Watertown, Aberdeen, any of those cities ring any bells?

Mr. **Smick**. I am aware that they have air service; they do not ring a bell as having fallen in that list that we looked at.

Senator **Pressler**. But in your study you picked the only city in my state that would support what you have been saying here this afternoon; all the rest would not. And I find that very disappointing, because to me, as one senator, it destroys your whole study if you cannot explain how you chose Sioux Falls.

Mr. **Smick**. Sir, the focus of the study was on hub concentration. We were asked to look at what might have happened——

Senator **Pressler**. But Sioux Falls is not a hub city, why did you choose it?

Mr. **Smick**. We were asked to look at what might have happened at several medium-sized or smaller cities. I looked at a list drawn from the Department of Transportation Origin and Destination Survey, which lists all cities in descending order of passenger traffic. I took a range that fell well below the 60 large hub and nonhub points that we had looked at, and was above the very small markets. I picked my sample from that.

Senator **Pressler**. What about our state capitol of Pierre, did you think of picking that?

Mr. **Smick**. I am going to say that my recollection is that Pierre did not fall within that list.

Senator **Pressler**. What cities did fall within that list, according to your recollection, in South Dakota?

Mr. **Smick**. I believe that Sioux Falls was the only city in South Dakota that fell within that range that we looked at.

Senator **Pressler**. Well, the problem I have been talking about—you see, we are talking about two quite different things. And I am very disappointed in your study if you picked the only city in my state that would support your conclusions, which you appear to have done. I am very disappointed.

Mr. **Smick**. I am sorry. I misspoke. I do have Rapid City here.

Senator **Pressler**. All right. Do you have Pierre, our state capitol?

Mr. **Smick**. No, I have Rapid City and Sioux Falls.

Senator **Pressler**. Those are our two largest ones. Do you have the state capitol of Pierre?

Mr. **Smick**. No, I do not.

Senator **Pressler**. Do you have Aberdeen?

Mr. **Smick**. No, I do not.

Senator **Pressler**. Do you have Watertown, Mitchell, Yankton? These are all fairly large cities in my scale of things, not according to certain other people.

Well, Mr. Chairman, I think this study—it does not do much for me, very frankly. And I think that I would agree with Senator Danforth's line of questioning; I am not going to repeat it.

Let me ask this. The GAO study identifies the following airlines that are heavily concentrated at hub airports: Delta, Texas Air, US

Air, United, Northwest, American, and TWA. What other major airlines, as ATA members, do not have a substantial control over a market somewhere?

Mr. **Aaronson**. Senator, could I ask you to repeat that list please?

Senator **Pressler**. Which of your members do not have a substantial control of the market? Maybe that would be an easier way of saying it.

Mr. **Aaronson**. By the definition that GAO is using, I suspect——

Senator **Pressler**. Well, by your definition. What major members of your association do not have substantial control of a market somewhere?

Mr. **Aaronson**. Off the top of my head, I cannot think of any. I would be happy to submit a correction.

Senator **Pressler**. So you are speaking for your clients, your members, or whatever you call them, all have heavy concentration at some hub airport; there are none of your members that do not have. Is that correct?

Mr. **Aaronson**. I cannot think of any at this time.

Senator **Pressler**. I think it is a very unhealthy situation and I think it is a very unhealthy way to do a study that you have done.

I do not know if we have accomplished much this afternoon except to convince this senator that maybe we are going to have to get back into the regulation business or do something. I do not know if we are doing our job. I do not know how I can go before my people and accept a study—we certainly cannot accept a study such as this. I do not think this study would stand up in any university classroom. If somebody submitted this as a master's thesis they would flunk. And if they submitted it in an undergraduate class, I think they would flunk also.

So I think we have a very serious problem.

Thank you, Mr. Chairman.

Senator **Exon**. Thank you.

Gentlemen, let us see if we can wind this up here.

Let me follow up on this matter of how you selected the cities, Mr. Smick. How many cities in your study showed a decrease in boarding?

Mr. **Smick**. In terms of the spoke cities, we did not compare boardings, we compared service: number of carriers, number of markets served on-line, number of markets with competitive service——

Senator **Exon**. How many cities showed increased in all of those, and how many showed decreases?

Mr. **Smick**. Of the 25 points, all of them showed increases.

Senator **Exon**. That is amazing. You selected cities that all showed increases. I suspected that was the answer, but you did not give me that answer to start with. But all of the cities showed increases?

Mr. **Smick**. Yes, sir.

Senator **Exon**. I think this goes to prove, more than anything else that you have heard here today, how important essential air service was when we started, and how important essential air service is now. We are fighting to keep that alive. We had hoped it could be phased out, but because deregulation did to the smaller communities of the United States what it did do, and exactly what we were fearful it would do, and it is a critical program.

The good thing about this hearing is it proves that we have to continue, I suggest to my colleagues, essential air service. We have built a pretty good case for that here today.

Let me ask you this question. Of the major surviving airlines since deregulation, of all of those airlines, what has been their combined revenue net; is it up or is it down since deregulation?

Mr. SMICK. By combined revenue, do you mean the net earnings of the airlines?

Senator EXON. Yes, that is right.

Mr. AARONSON. It has varied by year. We do not have that data with us, and we would be very happy to submit it for the record. But, in general, the earnings are higher right now than they were before deregulation.

Senator EXON. By what percentage would you guess?

Mr. AARONSON. I would rather not guess, Senator. I would like to submit that for the record.

[The following information was subsequently received for the record:]

As a percentage of operating revenues airline net profits since deregulation have averaged less than one-third their pre-deregulation level. Taken in actual dollar terms, industry net profits since deregulation have averaged approximately 96 percent of their pre-deregulation levels. The rate of return on investment in the airline industry has averaged seven percent since deregulation, substantially below the prime lending rate which averaged 12 percent over the same period.

Senator EXON. The last question I have for you, and I suppose this would be properly addressed to you, Mr. Aaronson, regarding the concentration of the industry, both in terms of concentration and number of carriers, and concentration of carriers at hub airports. What difference will there be in the airline industry five, 10 or 20 years from now, assuming there is no major change in regulatory laws?

Mr. AARONSON. I do not really know. We have taken a look at the situation in the industry and the service patterns around the country at hubs today, and have reported to you that we think the present situation is healthy and competitive.

And our philosophy, as is probably the case of most people in the Congress, is that if something is not broken you do not fix it. Whether it is broken or not is clearly in debate here, and I understand that. But I would certainly say that if the situation should change in the future, that at that time, some action may be appropriate. That is how we define the situation, that nothing is called for at this time to deal with the so-called hub concentration issue. If it creates problems later, then it deserves to be reviewed by the Congress.

Senator EXON. Do you believe that competition and lower rates would benefit if we had some slots available at the four slotted hub airports today?

Mr. AARONSON. Yes, sir.

Senator EXON. I have no further questions. And if there are no further questions, gentlemen, thank you very much, and we are adjourned.

[Whereupon, at 5:10 p.m., the hearing was adjourned.]

[The following information was subsequently received for the record:]

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ROBERT J. AARONSON
PRESIDENT

July 14, 1989

Honorable Wendell H. Ford
Chairman
Subcommittee Aviation
Committee on Commerce, Science and Transportation
United States Senate
Washington, D.C. 20510

Dear Senator Ford:

During the June 7, 1989 hearing by the Aviation Subcommittee, in response to questions from Committee Members, I agreed to provide certain information for the hearing record. That information is enclosed.

ATA was also asked to provide a critique of the General Accounting Office's study on concentration. Because that study has yet to be published, our critique is limited to GAO's testimony, and is also enclosed.

Sincerely,

Bob

Robert J. Aaronson

2 enclosures

AN ANALYSIS OF THE TESTIMONY OF THE GENERAL ACCOUNTING OFFICE ON AIR FARES AND SERVICE AT CONCENTRATED AIRPORTS

(Prepared by The Air Transport Association, July 1989)

The Air Transport Association (ATA) appreciates this opportunity to comment on the General Accounting Office's (GAO) report on concentration and air carrier operations at hub airports. We also welcome GAO's comments on the report by Simat, Helliesen, & Eichner (SH&E), which served as the basis for ATA's testimony before the Committee.

Unfortunately, ATA is at somewhat of a disadvantage, vis-a-vis the GAO, in preparing this critique for the record. Unlike the Simat, Helliesen, & Eichner report, which is in final form, and presents over 160 pages of documented data and analysis, the GAO report has not been published, and is not available to the ATA. Therefore, we are limited to an analysis of the 16 pages of written testimony and the appendices which constitute the GAO's only public document on the pending report.

The GAO set out to show that there is a link between "concentrated" airports and higher prices. They looked at just 15 concentrated airports and only one factor (concentration) to explain price variations in those airports. By way of contrast, the ATA examined 60 airports including 30 hub airports. The ATA looked at concentration as well as nine other variables in an attempt to understand the pricing variations that occur.

In addition to selecting only 15 airports for consideration, several of those airports are not concentrated. The GAO has included, as concentrated airports, those that have two carriers with 85 percent of the enplaning passengers. Yet such airports, like Atlanta and Denver for example, may well be vigorously competitive. It seems that the GAO would like to criticize the airline industry for not being competitive enough and yet where they clearly are competitive, the GAO still categorizes them pejoratively as concentrated. You can't have it both ways.

The GAO excluded from their study airports that were concentrated but also had low fares, thereby "stacking the deck" against the airports they did include in their study. Their explanation for this is that in cities with multiple airports, competition is provided to the concentrated airport from the other nearby airports. That is precisely the point that ATA was asserting in its testimony. It is not concentration but competition that is the variable that must be examined in order to evaluate prices at hubs.

In selecting "concentrated" airports, GAO immediately excludes from the analysis all multiple airport cities, regardless of whether these airports are concentrated or not. The GAO's reason: "[B] because competition from carriers serving the other airports might offset, to some extent, the effects of concentration." (Mead testimony, page 17)

This one exclusion criteria eliminates about 18 airports in seven U.S. cities--which happen to be 7 of the 10 largest generators of domestic origin and destination (O&D) passengers, according to the DOT, O&D Survey (chart No. ___). In fact, six of the cities are the top six ranked cities in the U.S.! These seven cities account for over 30 percent of the total U.S. domestic O&D traffic.

SEVEN OF THE TOP 10 CITIES IN DOMESTIC O&D TRAFFIC WERE ELIMINATED FROM THE GAO ANALYSIS

Rank	City	No. Of Airports	Sept.30,1988 O&D Passengers	Percent Of Total U.S.
1	New York	3	45,871,050	8.32%
2	Chicago	2	27,277,630	4.95%
3	Los Angeles	3	26,718,570	4.84%
4	San Francisco	3	18,348,400	3.33%
5	Dallas/ Ft. Worth	2	18,177,140	3.30%
6	Washington	3	17,985,790	3.26%
9	Houston	2	13,518,070	2.45%
	Total	18	167,896,650	30.45%

Source: DOT,O&D Survey,9-30-88

In short, before GAO even starts its analysis it eliminates airports generating nearly one-third of U.S. domestic traffic because they are too competitive!

The GAO selection criteria then proceeds to designate 15 airports as concentrated. Most of these airports tend to be "medium-sized cities" where airlines have established hubbing operations. For example, nine of the 15 airports serve cities which rank below 35 in domestic O&D passengers (according to the DOT, Survey 12 months ended 9/30/88). Most of these cities are the "newer" hubs recently established (e.g., Raleigh-Durham, Salt Lake City, Dayton) which now receive far more service than they would without hub operations (See ATA Report, Section 6.2).

These 15 "concentrated" airports, account for a total of 15.4 percent of all domestic O&D passengers, or about one-half of the number of passengers eliminated under the multiple airport city exclusion.

NINE OF THE GAO'S FIFTEEN CONCENTRATED AIRPORTS RANK BELOW 35 AMONG U.S. CITIES IN DOMESTIC O&D PASSENGERS

Rank	City	Sept.30,1988 O&D Passengers	Percent Of Total U.S.
8	Atlanta	14,284,770	2.59%
10	Denver	11,919,918	2.16%
12	Detroit	11,326,480	2.05%
20	Minneapolis	8,367,830	1.52%
22	St. Louis	7,738,250	1.40%
24	Pittsburgh	6,122,580	1.11%
36	Salt Lake City	3,901,790	0.71%
38	Cincinnati	3,506,470	0.64%
40	Nashville	3,397,250	0.62%
45	Charlotte	3,153,550	0.57%
47	Raleigh/ Durham	2,937,650	0.54%
49	Memphis	2,731,470	0.50%
61	Syracuse	2,114,120	0.38%
62	Dayton	1,879,610	0.34%
68	Greensboro	1,727,800	0.31%
	Total	85,109,538	15.44%

Source: DOT,O&D Survey,9-30-88

The "control group" airports are 38 airports. These are not representative of "average U.S. cities".

Nine of the 38 airports are ones where a low cost carrier--specifically Southwest and/or America West--is the first or second leading carrier at the airport in terms of enplanements. At all nine airports, the low cost carrier(s) share exceeds 20 percent, and in some instances is as high as 50 percent (e.g., Phoenix and El Paso). There are three other airports where although not the first or second leading carrier, the low cost carriers have over a 15 percent share of the market. In summary, over 12 airports in the "control" group are really "low cost carrier airports," not the "average U.S. airport."

LOW-COST AIRLINES, SOUTHWEST AND AMERICA WEST, ARE AMONG THE TOP TWO CARRIERS AT NINE OF THE GAO'S 38 "CONTROL" CITIES

	Southwest		America West		Total Southwest/ America West
City	Enpl. Rank	Enpl. Share	Enpl. Rank	Enpl. Share	Share
Rank No.1 or 2					
Albuquerque	1	27.5%	2	14.2%	41.7%
Austin	1	36.1%		1.9%	38.0%
El Paso	1	48.6%	3	10.6%	59.2%
Las Vegas	7	5.6%	1	28.9%	34.5%
Oklahoma City	2	22.1%	-	-	22.1%
Phoenix	2	14.6%	1	45.2%	59.8%
San Antonio	1	29.8%	-	-	29.8%
Tucson	-	-	1	24.5%	24.5%
Tulsa	2	24.1%	-	-	24.1%
Other					
Little Rock	3	19.9%	-	-	19.9%
San Diego	4	9.4%	7	7.7%	17.1%

Kansas City [Hub airport of Braniff, a low-cost airline]

Source: Enplanement data for cy 1987, per DOT, Form 41 Reports, as printed in "Aviation Daily" June 1988.

Seven of the 38 control airports are in Florida and have a much "higher than average" percentage of pleasure travel versus business travel. For example, Orlando, Ft. Lauderdale, Miami, West Palm Beach, and Tampa--all points in the "38 control group" were shown in the ATA study to have substantially higher pleasure travel than business travel, as measured by CITYGEN ratio (See Table 5.1, in ATA study).

GAO'S 38 "CONTROL" AIRPORTS INCLUDE FLORIDA CITIES WHICH TEND TO HAVE A HIGH PERCENTAGE OF PLEASURE TRAFFIC

City	"CITYGEN" Ratio
Ft. Lauderdale	50.8%
Ft. Myers	n.a.
Jacksonville	n.a.
Miami	46.1%
Orlando	32.6%
Tampa	67.6%
W.Palm Beach	51.6%
Ave.--30 Hubs	110.2%
Ave.--30 Non-Hubs	106.6%

Note: "CITYGEN" is a measure of domestic trips generated at a city relative to destination trips at the same city.

Source: ATA Study, Table 5.1.

In short, the GAO has selected a sample of "concentrated" airports which tends to be the medium-sized cities with hub operations and compares these cities with a control group where almost one-half of the cities are either low cost carrier cities or destination/resort areas with a high proportion of pleasure travel. The GAO has eliminated the largest (perhaps fairest sampling) of cities because they "may be too competitive."

This fact is verified by the SH&E report. It examined concentration measured by the HHI and found that this did not explain the variations in prices. It examined competition and found that this was/is an important factor in pricing. The question then becomes whether increased concentration leads to less competition and therefore higher prices. The ATA study found that, in fact, although concentration had occurred, competition had also increased leading to lower, not higher prices. The ATA study clearly states that a reduction in competition leads to higher prices. In fact the ATA study quantifies this relationship. The fact is, though, DOT data clearly shows beyond any doubt that competition has increased significantly since deregulation.

In the study prepared for ATA, SH&E specifically constructed an index of concentration using the same enplaned passenger measure used by the GAO. However, SH&E examined this measure for 60 airports rather than the more limited 15 selected by GAO. This measure of concentration, when used by itself, explained only 34 percent of the variation in prices at airports. Three other measures examined by SH&E provided better explanations for price variations from airport to airport than did the enplanement share measure. Any one of those three measures by itself explained more than 60 percent of the variation in prices at airports. That is to say, any one of those three measures would have been nearly twice as good at explaining price variation from airport to airport as the enplaned passenger share used by the GAO. Put another way, the measure used by the GAO does not explain high prices at concentrated airports because there are also high prices at non-concentrated airports and low prices and some concentrated airports.

The GAO study proves nothing but asserts guilt by association.

The SH&E study offers a further proof that a carrier's share of enplaned passengers is an improper measure to use when evaluating price variations from airport to airport. When this measure was combined with the nine other variables in the next part of the analysis done by SH&E (a stepwise regression), enplaned passengers was shown to be an insignificant in explaining the variation. In fact, only six of the measures examined were necessary to explain the price variations that had occurred, and the share of the enplaned passenger's was not one of the six.

Among the variables analyzed by SH&E were measures relating to service provided to a city. These service measures were characterized by GAO, in its testimony, as a substitute for concentration. SH&E measured the ratio of total seats and net seats (deducting seats filled by transfer passengers) to local passenger demand at the airport in question. The fact that high service levels are provided local residents at a hub can not simply be dismissed as another name for concentration. In point of fact, the most concentrated airport in the country--Dallas Love Field, where one carrier enplanes 100 percent of all passengers--shows a service factor of 2.03, some 23 percent below the 30 hub airport average, while relatively unconcentrated Dulles International Airport showed a service factor of 3.90, almost 50 percent higher than the 30 hub average.

SH&E was unfairly criticized by GAO for using common statistical analysis techniques because those techniques showed clearly that the work done by GAO was inadequate.

A further shortcoming of the GAO analysis of hub concentration is that they made only a crude adjustment for passenger trip distance. They segmented the airports in their study into those where the average trip distance was less than 500 miles, between 500 and 1,000 miles, and over 1,000 miles. A simple example (Table 1) shows that a small change in average trip distance for an airport can result in a dramatic change in the average yield measured with no change in prices charged in each trip distance category.

TABLE 1

AIRPORT A

DISTANCE (miles)	PASSENGERS	AVG FARE ($)	REVENUE ($)	AVG YIELD ($)
300	10,000	$83.43	$ 834,300	$0.2781
500	10,000	125.90	1,259,000	0.2518
600	20,000	129.06	2,581,000	0.2151
500	40,000	$116.86	4,674,500	$0.2337

AIRPORT B

DISTANCE (miles)	PASSENGERS	AVG FARE ($)	REVENUE ($)	AVG YIELD ($)
300	25,000	$ 83.43	$2,085,750	$0.2781
900	7,500	138.51	1,038,830	0.1539
1,200	7,500	147.00	1,102,500	0.1225
581	40,000	$105.68	$4,227,080	$0.1818

For example, Airport A and Airport B each have 40,000 passengers. The average trip taken by passengers from Airport A is 500 miles and the average trip taken by passengers from Airport B is 581 miles. This variation in trip distance falls well within the categories established by GAO in their study even though the passengers traveling from Airport B travel, on average, 16.2 percent greater distance than those traveling from Airport A.

Passengers at both A and B pay exactly the same fare as the national average for the distance they are traveling. That is to say, passengers who travel the same distance from Airport A or from Airport B pay exactly the same fare. Passengers traveling 300 miles pay $83.43 from either Airport A or B. Clearly, in this example, there is no difference in prices paid at A or B for similar trip distance.

Yet the GAO methodology would lead them to say that the passengers traveling from Airport A pay prices 28 percent higher than those paid at Airport B. Clearly this would be a highly misleading conclusion, yet it is the conclusion the GAO would have the Congress and the traveling public believe.

This lack of some measure of trip distance in the GAO study is particularly a problem since many of the 15 airports that they cite as concentrated are relatively new hubs with a large proportion of short haul service. In the process of creating a hub, the hubbing carrier normally realigns flights and adds many new flights to feed into the hub. These flights are generally short haul in nature. Because of the GAO methodology, the addition of short haul service will make the average fare for the hub increase even though the fare for the specific route added may be below the national average fare for that trip distance.

It has long been known that airline prices are most affected by airline costs. By excluding a factor in their analysis of prices at hubs that gives proper weight to changing trip distance they have excluded the single most important determinant of the cost structure of the industry. As can be seen in the attached chart, airline fares change in a direct relationship with changes in airline costs. If fuel costs or labor costs change, airline prices mimic that change. There were two periods when air fares increased sharply--one in 1973 to 1974 and again in 1979 to 1981. Both of the sharp increases were linked to sharp increases in the cost of jet fuel. From 1983 to 1987, as costs fell, airline prices also dropped. Recent price changes have tracked changing cost levels almost exactly.

In addition to recognizing the importance of trip distance in establishing the cost structure of air carriers providing service, the SH&E report explicitly recognizes cost as an important element in establishing prices by incorporating in their analysis the presence of low cost carriers as competitors. The GAO report gives no recognition to this important factor. One of the goals of deregulation was to free the airlines to compete and through that competition to become more efficient. Although mergers have concentrated the number of carriers providing service, these carriers provide significantly more and more vigorous competition than in 1978.

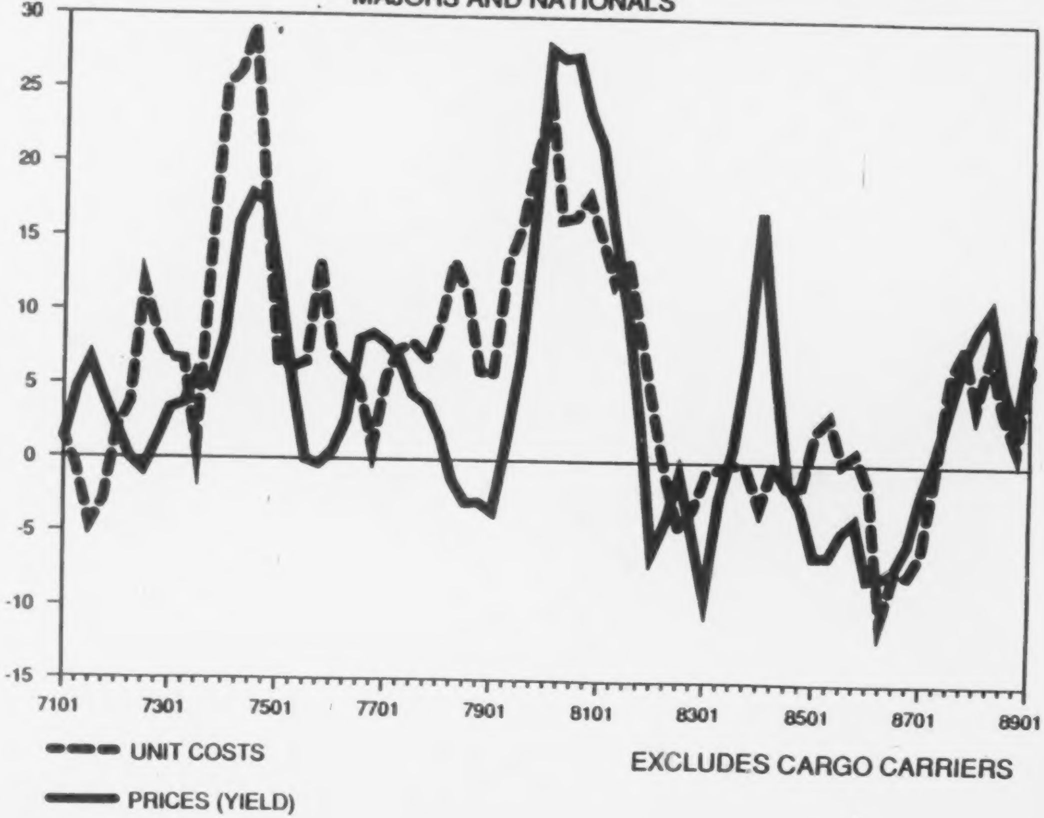
It is not clear in the GAO report whether the comparison of yields for the hubbing carrier to the other competitors at the hub are for similar markets. If the hubbing carrier serves many small communities in order to feed traffic into its other routes from the hub, and the competing carriers serve only the longer haul or the high density markets, then it is obvious that the flawed technique of the GAO would show that the hubbing carrier has higher yields. It may also be providing a completly different kind of service.

The GAO apparently believes that it takes at least four carriers in a market before effective competiton occurs. They noted that the number of markets served by four carriers has declined but say nothing of the number of routes served by two or three carriers. Data presented by ATA showed conclusively that the number of passengers traveling in markets where a single carrier has a dominant portion of the traffic has declined by half. Further, and equally important, ATA showed that there was a significant increase in the number of passengers traveling in markets where the carrier with the most traffic had less than a 30 percent market share. Clearly the system has become more competitive over the years. Yet the GAO has ignored this basic trend and instead has focused attention on markets where there are only four or more competitors.

GAO concludes that "... Overall, deregulation has led to lower airline fares for most travelers and the establishment of hubs has allowed the airlines to realize important operating efficiencies." GAO seems to be saying that although prices are lower, service is better, and competition has increased, there is something wrong. ATA firmly believes that the airlines provide a quality service at a reasonable price and that this is a great benefit to the nation.

PERCENT CHANGE - UNIT COSTS AND PRICES

MAJORS AND NATIONALS



EXCLUDES CARGO CARRIERS

GAO
United States
General Accounting Office
Washington, D.C. 20548

Resources, Community, and
Economic Development Division

August 14, 1989

The Honorable Wendell H. Ford
Chairman, Subcommittee on Aviation
Committee on Commerce, Science,
and Transportation
United States Senate

Dear Mr. Chairman:

During our June 7, 1989, testimony on "Air Fares and Services at Concentrated Airports" you asked us to comment on a just-released study prepared by Simat, Helliesen and Eichner, Inc. (SH&E) for the Air Transport Association, the other witness appearing at the Subcommittee hearing. We agreed to review the report and provide our comments, which are enclosed.

In our testimony, we compared airline fares at airports where one or two carriers dominated the traffic with fares at airports where there is greater competition and found that fares were higher at the dominated airports. SH&E compared fares at hub airports with those at non-hub airports, and found that fares were higher than average at some hub airports, but lower at others. However, many hub airports in the SH&E study either are not dominated by one or two carriers, or face competition from other nearby airports. If only dominated airports in single-airport cities are examined, then SH&E's data are consistent with our findings.

The SH&E study also attempts to show that differences in air fares are not related to the market shares of carriers at hub airports. The approach taken, however, contained some serious methodological problems and, therefore, cannot be used to disprove the hypothesis that airport dominance and fares are related.

We are sending a copy of this letter to the Ranking Minority Member of the Committee. If we can be of any further assistance to you, please call me at 275-1000.

Sincerely yours,

Kenneth M. Mead
Director, Transportation Issues

Enclosure

REVIEW OF "HUB OPERATIONS: AN ANALYSIS OF AIRLINE HUB AND SPOKE SYSTEMS SINCE DEREGULATION" BY SIMAT, HELLIESEN AND EICHNER

The study, Hub Operations: An Analysis of Airline Hub and Spoke Systems Since Deregulation, prepared for the Air Transport Association by Simat, Helliesen & Eichner, Inc. (SH&E), examines changes in fares and services at 30 hub and 30 non-hub airports since 1980.[1] The SH&E report attempts to show that higher fares at some hub airports are not related to the larger share of enplanements by the airlines dominating these hub airports, but can be traced instead to the higher quality service available to travelers flying out of hub airports, the existence of constraints on operations, competition on individual city-pair markets, and the presence of low cost carriers at the airport.

We have reviewed the SH&E report and we find that SH&E's data are consistent with our finding that fares are higher at airports where one or two carriers handle most of the enplanements. However, we found that SH&E's analysis contained some serious methodological problems and, therefore, cannot be used to disprove the hypothesis that fares and airport dominance are related.

SH&E Focused on Hubs Instead of Concentrated Airports

Over the past several years, a wave of mergers, acquisitions, and bankruptcies has reduced the number of competing airlines. Virtually all of the surviving airlines have reconfigured their route networks into hub and spoke systems. At some airports, a single airline handles more than 80 percent of enplaning passengers (including both originating and connecting traffic.) Moreover, the major airlines that dominate airports may be able to protect their positions by adopting marketing and operating strategies that effectively insulate them from competition from potential entrants.[2] This, in turn, could lead to higher air fares for those who fly out of dominated airports. Therefore, we examined fare and service data for 15 airports around the nation where one or two carriers handle most of the enplanements and compared fares paid by travelers flying out of those airports with fares paid by travelers at 38 relatively unconcentrated airports--i.e., those airports not dominated by one or two carriers.[3] Some of the unconcentrated airports making up our control group are hub airports for some of the smaller airlines.

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[1] A hub airport is one where an airline brings in travelers from many points, so-called "spokes", and transfers them to other flights bound for their final destinations. Such transfers are usually made in a relatively short period of time.

[2] Among the techniques large airlines employ that can make it difficult for competitors to enter a market already dominated by another carrier are frequent flyer programs, ownership of the computerized reservation systems used by travel agents in the airport's market area, and travel agent commission overrides.

While we compared fares at concentrated airports with fares at unconcentrated airports, SH&E contrasted fares at 30 hub airports with fares at 30 non-hub airports. Although many hubs are dominated by one or two carriers, others are not. We do not believe that hubs, per se, are the issue. Indeed, we recognize that hub and spoke networks have given many travelers greater choice in how to make their trips. More alternatives mean more competition and can lead to lower fares for those traveling through hubs.

By choosing to examine the question of whether fares are higher at hub airports, SH&E lumps together airports where the hubbing airline has significant market power with airports where the hubbing carrier has little market power. Several of the hub airports that SH&E includes in its analysis are not ones where one would expect fares to be above average. Some of these hub airports are not highly concentrated--that is, they are not dominated by the hubbing airline. Other hubs included by SH&E are located in cities where there is more than one airport. In multi-airport cities, competition from carriers operating out of other airport(s) might offset some of the advantage a dominant carrier might have at the concentrated airport. For example, Southwest Airlines handles 100 percent of the enplaning passengers at Love Field in Dallas. However, its ability to exploit its monopoly position is severely limited by competition from carriers serving Dallas/Ft. Worth International Airport. We excluded from our analysis airports in multi-airport cities because airport dominance will be less important if alternative air service is available from a nearby airport.

Figure 1, taken from SH&E's report shows that fares were above average at some hub airports and below average at other hub airports. However, when airports in multi-airport cities--Dallas Love Field (DAL), Houston Hobby (HOU), Detroit Metropolitan Wayne

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[3] We defined airports as dominated if one carrier handled 60 percent of enplanements or if two carriers handled 85 percent. We included in our study airports that were among the 75 largest, based on enplanements, in the nation. We excluded airports in cities where more than one airport offered regularly scheduled air carrier service.

County (DTW)[4] and Chicago Midway (MDW) and unconcentrated hub airports--Las Vegas (LAS), Kansas City (MCI), Milwaukee (MKE), Orlando (MCO), and Phoenix (PHX) are excluded, then SH&E's data show that average fares were higher than the industry average at all of the concentrated hub airports.

Six of the hubs that SH&E concluded had fares below the national average are hubs for smaller carriers (Southwest at Dallas/Love Field and Houston/Hobby, America West at Las Vegas and Phoenix, Braniff at Kansas City, and Midway at Chicago/Midway). These carriers either dominated traffic at the smaller airport in a multi-airport city (Southwest and Midway) or did not dominate traffic at their hubs.[5] Once the distinction between hubs and concentrated market power is made, we find that SH&E's data are fully consistent with our finding that air fares are higher at concentrated airports.

SH&E's Analysis Does Not Disprove That Fares and Concentration Are Related

An underlying rationale for deregulating the airline industry was that the industry was basically competitive. Because capital (the airplanes) is highly mobile, it was widely believed at the time that the airline industry was deregulated that market concentration was not as important a factor in determining fares as in other industries. Any airline that established dominance at an airport and tried to exploit its position by raising fares would quickly be faced with competition from other carriers. Thus, the threat of competition from potential entrants was expected to discipline airline fares even in relatively concentrated markets.

However, as both our work to date and SH&E's data show, air fares are higher at concentrated airports. In the years since deregulation, the major airlines have developed operating and marketing strategies that make it difficult for new entrants to challenge airlines at airports where the major airlines have

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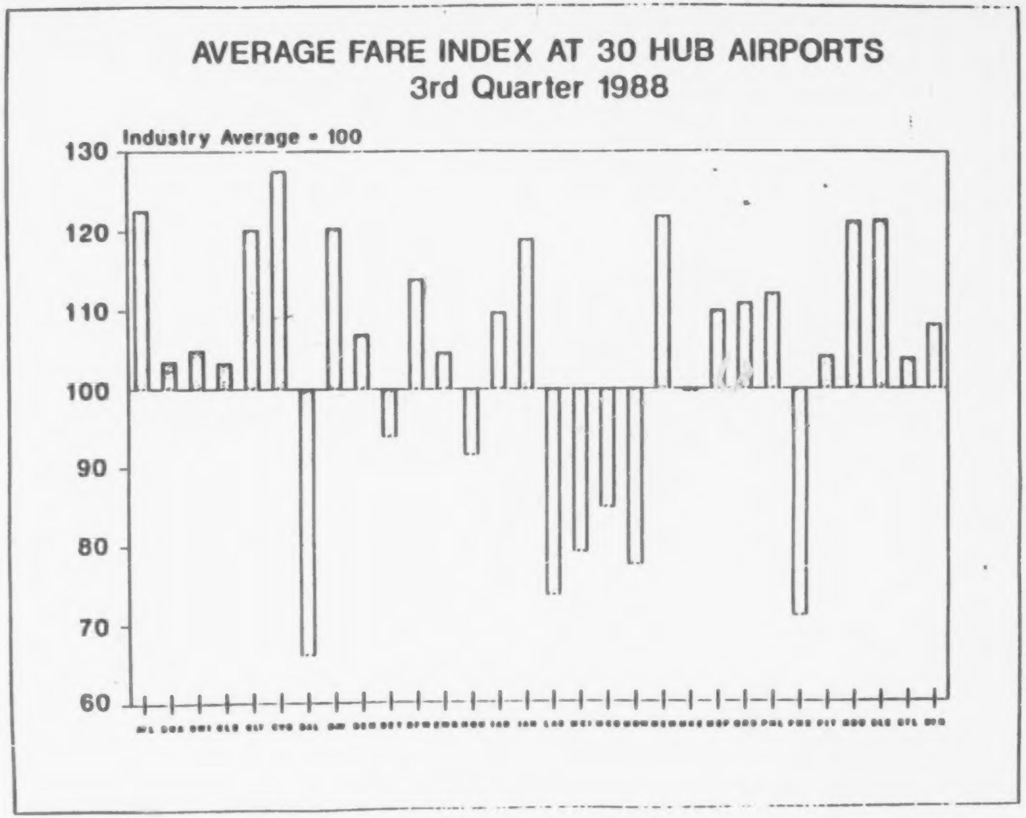
[4] Detroit was also included in our analysis, but it has become a multi-airport city since Southwest Airlines commenced operations out of Detroit City Airport (DET) in July 1988.

[5] Even if these carriers did dominate an airport, they might not be able to exercise the same kind of market power as the larger dominant airlines because they lack the ability to erect effectively the same entry barriers as the larger airlines. For example, the frequent flyer programs of the smaller carriers are not as attractive as those offered by the majors because the smaller carriers do not fly to as many places. The less extensive route systems of the smaller carriers limit the traveler's ability to earn free travel and offer limited opportunities for spending the bonuses.

Figure 1



Source: Simat, Helliesen, Eichner, Hub Operations: An Analysis of Airline Hub and Spoke Systems Since Deregulation, May 1989, pp. 1-12.

established a dominant position. We believe that investigating the relationship between fares and concentration is important, and we are currently developing an econometric model of airline pricing that attempts to measure how the various barriers to entry and other factors affect airline fares. SH&E presents the results of its own econometric model and claims its results show that airport dominance is not a significant factor in explaining the variation in air fares. However, our review of SH&E's model indicates that it contains serious methodological problems that invalidate its results.

SH&E employs multiple regression analysis to estimate how air fares (as measured by a fare index, labelled FARRAT) are affected by airport dominance (as measured by the Herfindahl-Hirschman Index, or HHI[6]) and other factors. Multiple regression analysis attempts to explain the variation in a dependent variable (in this case air fares) by correlating it with the variation in independent variables (in this case service levels, concentration factors, load factor, et al) that are thought to explain the behavior of the dependent variable. SH&E finds that the relationship between air fares and airport dominance (the HHI) is not statistically significant when the influence of other factors, especially service quality, is taken into account. However, the model developed by SH&E suffers from a serious methodological problem--the independent, or explanatory, variables are not independent of each other.

If the independent variables are not truly independent, but are instead highly correlated with each other, then the regression model is unable to separate the individual effects and, therefore, very little confidence can be placed in the results. For example, we might believe that individual income is positively related to educational attainment and parental income. However, a regression model that includes both education and parental income as explanatory variables will likely yield unreliable results. Although education might be a very important factor determining personal income, its effect might be masked because parental income is also included in the model and parental income is highly correlated with educational attainment. In general, whenever two or more closely related explanatory factors are in the regression model, the results will not show clearly which of them has the most significant impact on the dependent variable. When this condition exists, the measures of statistical significance are biased toward concluding non-significance. SH&E justified excluding the variable measuring airport concentration on the finding that it was statistically insignificant.

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[6] The HHI is the sum of the squares of the market shares of the firms in the market. Thus, the highest possible HHI is 10,000 when one firm controls 100 percent of the market (100 X 100 = 10,000). This measure assigns a higher value to the situation where one firm dominates a market than to cases where the firms have relatively equal shares. For example, the HHI for a market where three firms held 80, 10, and 10 percent shares would be 6,600, while a 40, 30, and 30 percent distribution would produce an HHI of 3,400.

Whenever two or more highly correlated independent variables are in the model, a condition exists that statisticians call multicollinearity. As a rule of thumb, multicollinearity is likely to be a problem if the simple correlation between two independent variables is greater than the correlation between either independent variable and the dependent variable. SH&E uses several variables that are highly correlated with one another and which are more correlated with each other than with the dependent variable (air fares). For example, the independent variables measuring service quality are highly correlated with the independent variable measuring airport concentration. Therefore, SH&E's results cannot be used to show the lack of a statistically significant relationship between fares and concentration.

SH&E argues that high fares are caused not by high airport concentration levels, but by other factors, such as high levels of service quality. High levels of service are costly to produce, and people are willing to pay more for this service. SH&E includes several variables that are supposed to be proxies for service quality, but these variables are all highly correlated with each other and with the variable representing concentration (see fig. 2). Furthermore, these "quality" variables are, in fact, measuring the quantity of service provided to local originating travelers and are explaining the same variation in fares as concentration. Thus, it is likely that including these variables in the model is responsible for SH&E's finding that concentration is not a statistically significant determinant of air fares. The variables that are highly correlated with concentration (HHI) are:

SEATSOD - SH&E uses this acronym for the ratio of total available seats in a market to the number of seats necessary to accommodate local-origin and destination traffic. The ratio will be higher for airports that have high volumes of connecting traffic relative to local traffic, that is, that are large hubs. A large hub operation is often associated with one carrier, the hubbing airline, having the dominant share of the airport's enplanements. Hence, SEATSOD and HHI are closely correlated (.72, where 1.00 equals perfect correlation - see fig.2) and show a higher correlation than SEATSOD and the dependent variable, the fare index.

ESTSOD - This acronym stands for the ratio of local seats available to local traffic, and is similar to SEATSOD. It is calculated by subtracting connecting passengers from total seats available and assigning all the empty seats to local traffic. This variable is nearly perfectly correlated with SEATSOD (.96) and is also more highly correlated with the concentration variable, the HHI (.67), than with the fare level variable, FARRAT (.64).

Both these variables attempt to measure the "hubness" of an airport. SH&E argues that these variables are measures of the quantity and quality of service, in that the greater volume of service available probably means there are more frequent flights and more nonstop flights available to local travelers. SH&E states that travelers are wiling to pay more for a higher quality of service.

We agree with SH&E's observation that service for local travelers generally improves after an airline establishes a hub, and that some travelers are willing to pay more for the more frequent and more direct service. That these hubbing variables, SEATSOD and ESTSOD, are considered to be positively related to fares may reflect the effects of market dominance from establishing the hub rather than the effects of improved service quality. The ability to charge and receive higher fares for the improved service reflects market power.

In addition to the variables that are proxies for service quality, two other variables in SH&E's model are highly correlated with the concentration variable. These are:

DOMIND - This acronym stands for the dominant carrier's average market share on all the routes out of an airport. It is also highly correlated with the airport concentration variable, HHI (.70). SH&E finds that DOMIND is a significant determinant of air fares, while HHI is not, despite the fact that the simple correlation between HHI and the dependent fare variable is much higher than for DOMIND and the dependent fare variable (.34 vs. .03). This indicates that the explanatory power of airport dominance is being sapped by including other intercorrelated variables, such as route dominance.

HUBDMY - This variable is a "dummy" variable that takes the value 1 if the airport is a hub for one airline, 2 if it is a hub for two airlines, and 0 if it is not a hub. Since an airport that is a hub is more likely to be concentrated than one that is not a hub, this variable, too, is correlated with the concentration variable, HHI (.56), and is more correlated with HHI than with the dependent variable, FARRAT.

The intercorrelation of the SEATSOD, ESTSOD, DOMIND and HUBDMY with the concentration variable, HHI, provides clear evidence of multicollinearity in this model. SH&E recognizes the presence of multicollinearity on page 5-11: "DOMIND and the service variables (SEATSOD and ESTSOD) are relatively strongly correlated with HHI." Although this is a basic problem in statistical analysis, SH&E does not address it. There are

Figure 2: Correlation Among Fare Regression Variables

	FARRAT	HHI	SEATSOD	LF	LOCOST	CITYGEN	DOMIND	ESTSOD	CONSTRAIN	HUBDMY	MARFREQ
FARRAT	1.000										
HHI	0.337	1.000									
SEATSOD	0.622	0.718	1.000								
LF	-0.250	-0.038	-0.135	1.000							
LOCOST	-0.740	0.118	-0.266	0.134	1.000						
CITYGEN	0.298	-0.002	-0.026	-0.207	-0.159	1.000					
DOMIND	0.033	0.704	0.244	-0.214	0.401	0.141	1.000				
ESTSOD	0.643	0.667	0.963	-0.368	-0.273	0.017	0.280	1.000			
CONSTRAIN	0.164	-0.155	-0.151	0.262	-0.127	0.074	-0.126	-0.204	1.000		
HUBDMY	0.262	0.557	0.614	0.111	0.091	-0.006	0.153	0.530	-0.086	1.000	
MARKFREQ	-0.181	-0.083	-0.179	0.508	0.225	-0.081	-0.139	-0.300	0.179	0.113	1.000

Source: Simat, Helliesen, and Eichner, Hub Operations: An Analysis of Airline Hub and Spoke Systems Since Deregulation, May 1989, pp. 5-9.

techniques for dealing with multicollinearity, such as combining variables, but none is adopted here.

Other Methodology Issues

In addition to multicollinearity, we have identified several other problems with SH&E's analysis.

Variable Measurement. By not taking into account multi-airport cities in its analysis, its variable representing concentration and market power, the HHI, is poorly measured. For example, Dallas/Love Field has the highest HHI, a perfect 10,000, but Southwest Airlines has relatively little market power because of competition from carriers serving the larger Dallas airport. By assigning a high value for the concentration variable to observations where concentration will have little impact, the SH&E model undercuts the variable's explanatory power.

Database Development. SH&E used the Department of Transportation's (DOT) Data Bank 1A rather than relying on processed data from one of the major airline data vendors. We also used Data Bank 1A in our analysis. When using Data Bank 1A, it is necessary to edit the fare data to exclude erroneously recorded fares that are obviously too high or too low. DOT had a fare screen for its internal use, but it had not been updated for many years. In preparing our analysis, we developed a new edit routine, which DOT has endorsed and which at least one airline data vendor has adopted. SH&E was probably unaware that we had developed this new screen and instead applied a fare screen that excluded only fares over $2 per mile and $0 fares. Our fare screen was based on published fare data and recognizes the distance taper in airline fares. A comparison between our fare screen and SH&E's suggests that SH&E's screen allows many fares into the database that are too high, especially for longer distances, while it excludes some valid short distance fares (see fig 3.).

Treatment of Common Ownership. In our analysis we treated airlines that were jointly owned as a single carrier. We reasoned that if one airline was owned by another, it would not be expected to compete with the parent. SH&E, on the other hand, treats them as different carriers. This is a problem in cities such as Syracuse where USAir and Piedmont, which are jointly owned, each has a large market share. Classifying airports such as Syracuse as being more competitive than they actually are tends to bias the results. If concentration is a factor explaining airline fares, then misrepresenting competitive conditions will yield misleading results.

Figure 3: Comparison of GAO and SH&E Origin-Destination Data Fare Screens

	SH&E Screen Exclude if yield is		GAO Screen Exclude if yield is	
Mileage category	equal to cents/mile	greater than cents/mile	less than cents/mile	greater than cents/mile
1- 100	0	200	8	300
101- 200	0	200	4	255
201- 300	0	200	3	160
301- 400	0	200	3	125
401- 500	0	200	3	115
501- 700	0	200	3	105
701-1,000	0	200	3	80
1,001-1,300	0	200	3	65
1,301-1,600	0	200	3	55
1,601-1,900	0	200	3	50
1,900-2,200	0	200	3	40
2,201-2,500	0	200	3	40
>2,500	0	200	3	40

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June 7, 1989

Honorable Ernest F. Hollings, Chairman
Senate Committee on Commerce, Science
 and Transportation
Washington, DC 20510-6125

Dear Senator Hollings:

I have read with great interest your April 20, 1989 correspondence with Secretary of Transportation Samuel K. Skinner and Attorney General Richard Thornberg concerning increased concentration in the airlines industry. As you know, the Minneapolis-St. Paul International Airport ("MSP") is one of the hub airports that is dominated by a single air carrier, that being Northwest Airlines. Enclosed is my statement regarding the competitive effects of hubbing on MSP. It is my judgment that Northwest Airlines, as a direct result of its merger with Republic, has the power to raise prices at MSP and to reduce services throughout the region. Further, I believe that Northwest has used that power to do both.

Single carrier dominance of hub airports is not the only threat to competition in the airline industry. Highly leveraged takeovers of existing air carriers present another. As you are also no doubt aware, Northwest Airlines is currently a takeover target. Analysts predicted that the initial tender offer for Northwest Airlines, which was commenced in March, would have almost certainly led to the airline's dismantling. It is difficult to anticipate the financial terms of the more recent, and as yet nonpublic, offers to acquire Northwest that are currently being reviewed by the company's board of directors. However, if Northwest Airlines is taken over, it is quite possible that the buyer will of necessity saddle the company with a significant debt load which will so impair the company's financial strength as to require its eventual dismantling. The break up of Northwest Airlines would mean the elimination of one of the eight remaining major air carriers and thus a further increase of concentration in the airline industry.

AN EQUAL OPPORTUNITY EMPLOYER

I recommend that you and your committee urge Secretary Skinner to review the potential impact of highly leveraged acquisitions of U.S. air carriers as called for by Senator Carl Levin's June 1, 1989 sense of the Senate amendment to H.R. 2072, a copy of which is enclosed. The Department of Transportation must halt any highly leveraged takeover of a major air carrier if the transaction, by imposing a heavy debt load on the company, threatens the carrier's ability to compete effectively and to survive economic downturns.

Thank you for your consideration of my views.

Best regards,

Hubert H. Humphrey III

Hubert H. Humphrey, III
Attorney General

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ANTI-COMPETITIVE EFFECTS OF HUBBING AT MINNEAPOLIS-ST. PAUL

In 1986, the Department of Transportation approved the merger of Northwest Airlines and Republic Airlines. As a direct result of the merger of the two carriers with the largest presence in the Twin Cities, a single carrier has achieved overwhelming market dominance. Northwest now operates over 80% of the flights from Minneapolis-St. Paul International Airport ("MSP"). Earlier this year, the St. Paul Pioneer Press Dispatch reported that Northwest was operating over 450 scheduled arrivals and departures daily. By comparison, its nearest competitor, United, only had 34 arrivals and departures daily. See St. Paul Pioneer Press Dispatch, Jan. 15, 1989, at 12A, col. 2-3. Perhaps more importantly, Northwest controls 47 of the 66 gates in the main terminal. No other operator has more than four gates. See Metropolitan Airports Commission report to the U.S. General Accounting Office, 1989.

A market share of the size enjoyed by Northwest in the Twin Cities generally is considered indicative of monopoly power. See L. Sullivan, Handbook of the Law of Antitrust 75-76 (1977). This paper outlines the indications we have seen in Minnesota that Northwest in fact has monopoly power and the ways in which Northwest has used that power. This is followed by a discussion of the barriers which exist to other airlines competing in a meaningful way with Northwest at MSP.

The dominance by Northwest at MSP is harming, or has the potential to harm, consumers in several ways, most obviously in price. Based on data supplied by Boeing Co., Airline Economics, Inc. has shown that passengers who begin or end their trips in hubs dominated by single carriers pay significantly higher fares than do passengers who merely fly through the hub. For the Twin Cities, the Airline Economics study indicated that passengers beginning or ending their trips at MSP pay approximately 40% more than passengers who are simply changing planes. This conclusion is supported by the work of Dr. Severin Borenstein of the University of Michigan. Dr. Borenstein found that fares for passengers beginning their trips in the Twin Cities rose 18.5% in the period following the merger with Northwest. During the same period, Northwest fares at other airports rose by 8% and fares nationally rose by an average of only 3.3%. See St. Paul Pioneer Press Dispatch, Jan. 16, 1989, at 12A-13A. See also Minneapolis Star Tribune, Dec. 23, 1988, at 1A, col. 1.

While the conclusions reached by Airline Economics and Dr. Borenstein have been challenged by Northwest, the issue is only partly whether passengers are already forced to pay monopoly pricing. The real point is that Northwest can raise its prices for many of its passengers if it desires. As I discuss below, there is no serious possibility of any other airline challenging Northwest's position at MSP. It would seem that the only bar to

Northwest's charging prices higher than would be experienced in a competitive market is the company's concern that the airline industry might be reregulated. See Airlines Won't Risk Consumer Turbulence, St. Paul Pioneer Press Dispatch, May 23, 1989, at 5C, reprinted from N.Y. Times; Continental Drops Plan to Boost Fares After Other Carriers Don't Follow Suit, Wall St. Journal, May 17, 1989, at B8.

Northwest has also been able to use its market power to promote its computer reservation system ("CRS"). In early 1987, Northwest bought a 50% share in PARS, a CRS owned exclusively by TWA. At that time, PARS had virtually no clients in the Twin Cities. In just two years, PARS has captured 30% of travel agency volume. This has not been accomplished by virtue of PARS having a better product. Rather, Northwest has convinced travel agents and their clients that in order to get the best service from Northwest as an airline, the agents had to switch to the PARS system. See In Twin Cities, Northwest PARS Push Irks Agents, Travel Weekly, Feb. 23, 1989, at 1, col. 1. At least implicitly, Northwest threatened the agents with the loss of the ability to get such things as wait-list clearance and upgrades. Travel agents have had to take such threats seriously, as their large clients will not stand for losing these services on the carrier which will represent four out of every five flights they book.

Another serious problem associated with hubbing is that a concentration of economic power also leads to a concentration of political power. Northwest is an enormous employer in Minnesota. These jobs are greatly appreciated, but having them all concentrated in the hands of a single employer gives Northwest a very loud voice in local and state government. This voice can be used to promote policies favoring Northwest over its competitors. Because of the susceptibility of local governments to the "jobs" issue, this concentration of political power may be the principal reason why, over the long haul, state antitrust and other regulators cannot be completely effective substitutes for meaningful federal oversight.

As an example of how this political power can be used in an anti-competitive way, Northwest has had a large role in preventing the building of a new airport. MSP is located within the city of Minneapolis. Its proximity to the most densely-populated metropolitan areas means enormous numbers of people are disturbed by the noise of the planes landing and taking off. The issue has spawned citizens groups which have clamored for a new airport to no avail.

There are also doubts about the current airport's ability to meet the needs of the city into the next century. One of the factors which has carried the most weight in the decision-making process is that Northwest doesn't want a new airport. See Airport Proposal Will Draw Battle Line, St. Paul Pioneer Press Dispatch, Sept. 25, 1988 at 12A, col. 6. The company's interest in the status quo is obvious: Northwest dominates MSP; it might have to compete at a new, expanded facility.

Carriers which dominate regional hubs such as MSP are able to extend their market power far beyond the hub metropolis to smaller cities such as Bemidji and International Falls, Minnesota. Such cities and hundreds like them throughout the country are only served by small regional carriers such as Mesaba Aviation, Inc. which act as so-called "feeders" to the hub operator. Feeder airlines are almost completely dependent on the hub-dominant carrier: they use the national airline's logo, ticket designator, airport facilities, and other services. The hub operator sets the feeder's schedule and ticket prices so as to maximize the passengers being fed into its national system. The feeder airlines are perceived by the passengers as part of the larger airline's system. The benefits to the feeder airlines of this perception are so great that a regional airline without a feeder contract simply can't compete with an airline which does have one.

In practice, fewer hub carriers mean fewer feeders, which mean less service to cities like Duluth, Sioux Falls, etc. The result has been substantial cuts in service to smaller, regional airports such as Grand Forks, North Dakota, and what appears to be a gradual absorption of the feeder airline into the national carrier. To consumers, the net effect appears to be a classic situation of a monopolist cutting output to support higher prices.

An example of the dangers presented by the feeder contracts is demonstrated by the situation in Minnesota and

Michigan before and after the Northwest/Republic merger. Before the merger, Mesaba acted as a feeder to Northwest at MSP, while Express was a feeder for Republic. Mesaba and Express were direct competitors on many routes. Even on routes where they did not go head-to-head, the two stood by as potential competitors, each ready to discipline anti-competitive prices or subpar service by the other.

According to Northwest documents filed in a lawsuit in St. Paul, after the Northwest/Republic merger, Northwest told the regionals that it would have only one feeder on each route. Mesaba and Express subsequently agreed to an allocation of routes in and out of MSP, with the effect that they are no longer competitors. See Fischer v. NWA, Inc., No. 3-87 CIV 106, slip op. at 3-4 (D. Minn. June 9, 1988).

On the other hand, Northwest's and Republic's feeders in Detroit, Fisher Bros. and Simmons respectively, were unable to reach an agreement about route allocations. Northwest subsequently terminated its contract with Fisher Bros., and soon Fisher Bros. was out of business. Id. at 4-5.

The contracts that Northwest has with its feeder airlines permit Northwest to call the competitive show. Northwest sets the ticket prices and handles much of the logistics for the feeders. The feeders are compensated by Northwest on the basis of their costs. For all intents and purposes, so far as the passenger is concerned, the feeders are simply extensions of Northwest -- and Northwest does not compete against itself.

Thus, Northwest has extended its monopoly out of the Twin Cities into the smaller airports in the region. Because a local airline cannot survive without a contract with Northwest, Northwest has the power to exclude competition on the local routes. Instead, through the restrictive vertical arrangement it imposes, Northwest unilaterally can decide whether to fly a route itself or to have a captive feeder provide the service. Either way, Northwest sets the price for its own benefit. As with national passengers who begin or end their trips at MSP, the only barrier to Northwest setting monopoly prices on the feeder routes would seem to be concern over reregulation of the industry.

The hub operators have argued that if a dominant airline abused its position by either charging monopoly prices or providing poor service, another airline would step in. There are compelling reasons to believe that formidable barriers to entry make meaningful competition in this market unlikely, at least during the next few years.

At many hubs physical limitations of an airport system which is rapidly becoming obsolete would act as a substantial barrier to entry to anyone planning to enter the market. The shortage of gates is the most visible limitation. At MSP, in order to compete at even 25% of Northwest's size, an airline would require upwards of ten gates. These simply aren't available. The Metropolitan Airports Commission ("MAC"), which operates MSP, has advised us that additional gate space could be built (albeit at a remote terminal rather than at the main terminal). However, MAC seems to be caught in a "chicken or the egg" situation. If they build new gates, they have to hope someone will come along to use them. It is hard to justify such a large expense without any assurance that the gates will be used, particularly when a completely new airport is being considered. On the other hand, any airline considering such a commitment must face the fact that they will have to announce plans a year or more in advance -- then sit back while the gates are built, hoping that the economic conditions don't change.

Competition at MSP would have to come from either a newly-formed airline or from one of the existing carriers. Financial conditions do not appear favorable to entry by new airlines. Several knowledgeable commentators, most notably Alfred Kahn, who as chairman of the CAB oversaw deregulation, have concluded that no new airlines will enter the market unless economic conditions substantially change. As Prof. Kahn has said, "Banks simply aren't going to lend money to establish a new airline." See Minneapolis Star Tribune, Oct. 23, 1988, at 3D, col. 3. This would seem to be equally true with regard to the sudden expansion of one of the remaining small airlines. Unless foreign carriers are encouraged to enter our domestic market, we therefore seem to be stuck with, at best, the eight airlines which currently control over 90% of the U.S. market.

Eight is not a necessarily unreasonable number of competitors, _if_ they all remain in the market. The problem is that the specter of further concentration darkens the horizon. Eastern's well-known financial problems threaten its future. Meanwhile, Pan American has announced its intent to make an offer for Northwest. If the two do eventually merge, it will reduce the number of major domestic airlines.

The degree of concentration in an industry that will result from a merger can be measured by the Hirfindahl-Hirschman Index ("HHI"). This is calculated by adding the squares of the market shares (expressed as percentages) of each of the participants in a market. As an example, a market with 100 participants, each with a 1% share, would have an HHI of 100 (calculated as 100 x [1x1] = 100). A market with two equally large participants would have an HHI of 5000 (again, calculated as 2 x [50x50] = 5000).

Both the U.S. Department of Justice ("DOJ") Merger Guidelines and the National Association of Attorneys General ("NAAG") Horizontal Merger Guidelines use the HHI to help determine if a merger would be anti-competitive. Both NAAG and DOJ consider markets with HHI's of between 1000 and 1800 to be "moderately concentrated," and both call for a merger to be challenged if the merger would cause an increase in the HHI of over 100 in a market which is moderately to highly concentrated, unless pro-competitive features are present. _See_ U.S. Dept. of Justice Merger Guidelines §§ 3.1 and 3.11(b) (June 14, 1984);

Horizontal Merger Guidelines of the Nat'l Ass'n of Attorneys General §§ 4. and 4.2. Using 1988 market shares reported by Airline Economics, Inc., a Pan Am/Northwest merger would increase the HHI of the U.S. domestic airline market by at least 131 to at least 1330. See N.Y. Times, Mar. 12, 1989, at 16. While the HHI is not the end of the story in merger analysis, the DOJ and NAAG guidelines in this situation reflect the fact that the merger very likely would affect competition. If nothing else, it would further reduce the number of potential competitors to Northwest at MSP.

Beyond the question of whether we will continue to have eight potential competitors, it should be recognized that the eight may not be acting as true competitors now. There are signs that the airlines are reluctant to invade a competitor's hub. Delta, for example, may be deterred from competing aggressively in the Twin Cities because a move by them could trigger a counter-move by Northwest into Delta's hubs, say, Atlanta. As Frank Spencer, an airline deregulation expert at Northwestern University's Transportation Center has said, "When you're down to the last half-dozen or so, they decide it's better to live and let live." See Wall Street Journal, Aug. 31, 1988, at 1, col. 1. In some cases, this "cooperation" has been quite explicit. When Braniff moved its hub from Dallas to Kansas City, American put up the money to pay for the move. After Braniff arrived in Kansas City, Eastern left, saying competition there had become too "scrappy." Id.

There are also signs that the airlines do not always compete aggressively on price. Instead, price increases are publicly announced well in advance by one airline, and the others follow along. If the ostensible competitors' airlines do not follow along, the announcing airline simply does not impose the increase. Thus, in a classic illustration of the dangers of concentrated markets, they carry out price-fixing negotiations in the newspapers.

An example of how this works was presented just this spring. In April, 1989, Continental announced price increases of up to 18%, apparently expecting other airlines to follow suit. When several of them failed to go along, Continental was forced to retract its increases. Several analysts have concluded that the only reason the airlines did not increase their prices was concern over a possible backlash which might even result in some level of reregulation. See St. Paul Pioneer Press Dispatch, May 23, 1989, at 5C; Wall St. Journal, May 17, 1989, at B8.

Even for an airline willing to compete, and for which space can be found at MSP, Northwest's advantages in marketing its seats would constitute an enormous barrier to any new entrant. I have already mentioned Northwest's efforts to cause Twin Cities travel agents to subscribe to PARS. It has been found that travel agents tend to book more flights on the airline which hosts its CRS, the so-called "halo effect." Additionally, there are signs that, despite fairness rules adopted by the CAB in 1984, CRS's are still biased toward their host airlines. This can be accomplished through what is called architectural bias: it can take longer and be more difficult for a travel agent to book flights on airlines other than the host. A CRS in the hands of a hub-dominant carrier creates an anti-competitive vicious cycle. Its hub dominance gives it the power to leverage its CRS which, with the halo effect, results in increased hub dominance. (I have discussed CRS's in detail in another forum, and I have attached for the Committee's convenience a copy of those comments.)

More directly, Northwest and other dominant operators can use commission overrides and other incentives to cause travel agents to promote Northwest at the expense of any new competitor. Commission override programs, which boost commissions to travel agents who keep sales on a particular airline at particular levels, make it economically foolish for local agents not to favor Northwest. This means that an airline wanting to compete with Northwest must either pay enormous commissions or be as big as Northwest at MSP in order to compensate agents for lost bonus commissions.

At the same time, a travel agent pushing the competitor airline risks losing free tickets, service upgrades, and other Northwest "perks." Unless a new competitor enters a market at a scale similar to that of the existing hub operator, they won't be able to offer the same level of side benefits to travel agents.

Nor will they be able to offer the same level of benefits to the passengers themselves. Unless a competitor enters at a very large scale, regular fliers from the Twin Cities will inevitably find themselves forced to fly Northwest more often than its competitors. This means that passengers will earn greater frequent flyer program credits on Northwest than on the competitor. This in turn encourages the traveler to use Northwest, even when there is a choice.

In summary, as a direct result of its merger with Republic, Northwest has the power to raise prices at MSP -- and has used that power. Also, as a direct result of its merger with Republic, Northwest has the ability to reduce services all over a region extending far beyond the Twin Cities Metropolitan Area -- and services have been reduced. Northwest has translated its hub airline power into CRS power, setting in motion an anti-competitive vicious cycle which forms just one bulwark in the company's ever-growing defenses against meaningful competition.

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